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NOVEMBER 1953

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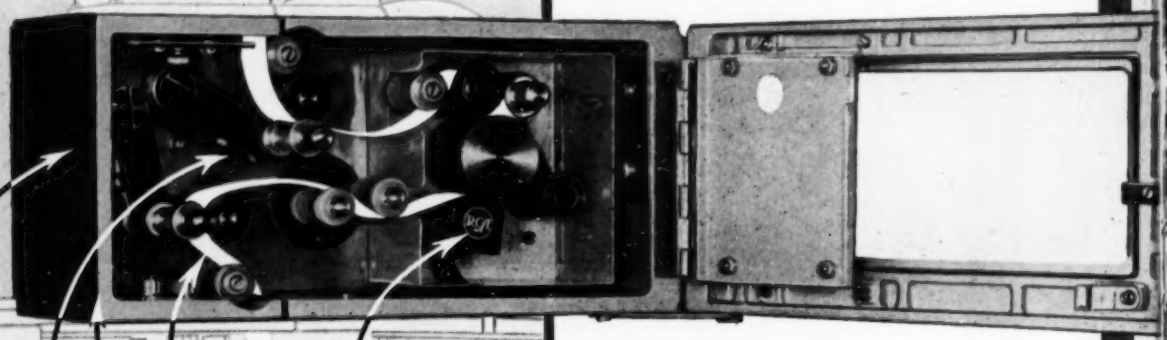

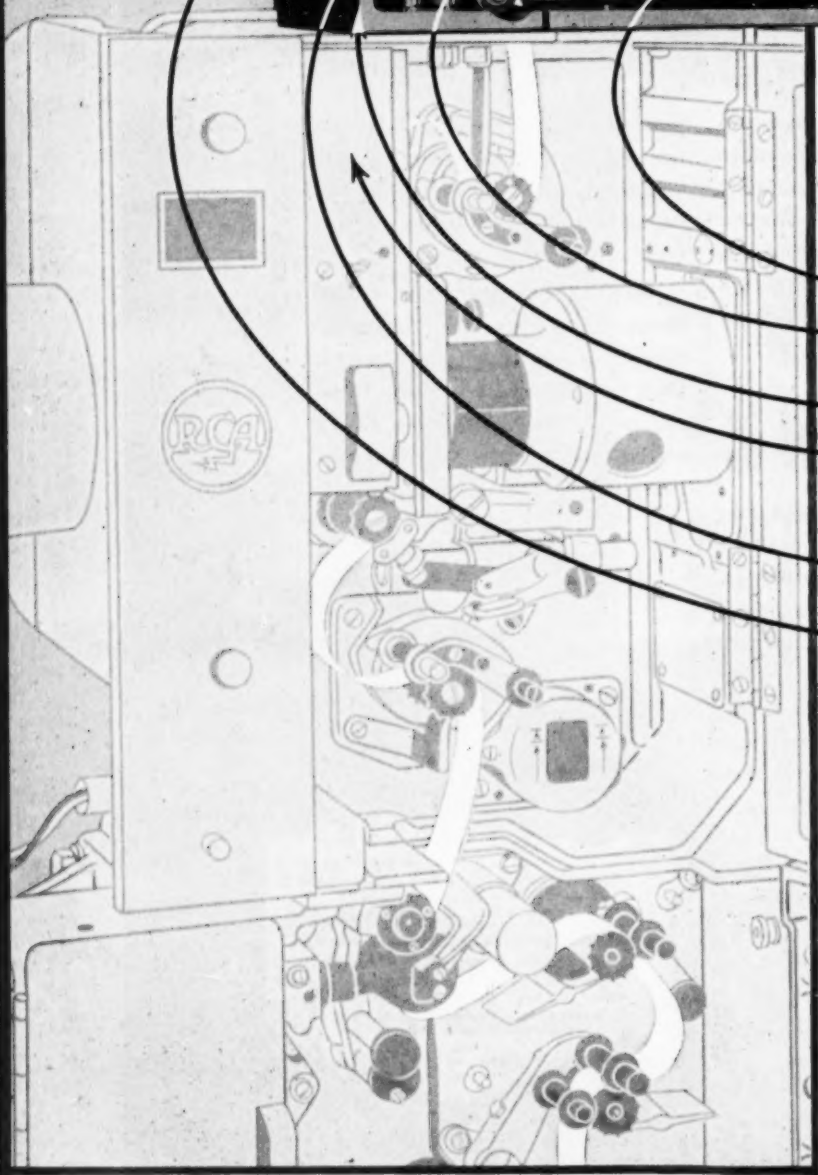

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FREDERICK HODGSON, *Editor*

JAMES MORRIS, *Associate Editor*

Volume 28 NOVEMBER 1953 *Number 11*

Index and Monthly Chat ... 5

Hints on Handling Magnetic Soundheads 7
C. A. TUTHILL

Stereoscopic Projection and Photography
Part IV — 3-D Projection Room Problems 11
ROBERT A. MITCHELL

Nord Single-Film 3-D Set for Release 13

Effect of Stray Light on Screen 14
RAYMOND L. ESTES

Highlights of the TESMA-TOA Show 15
FREDERICK HODGSON

An Echo from Chicago 16

Letters to the Editor 17

In The Spotlight 18

Personal Notes 19

What's Your Problem? 20

Pension Protection—Goal of Labor, IV 21

King Size Arc Lamp Due 22

Portable 16-mm Arc Projector Is Marketed by Victor ... 22

Lens Cleaning: Do's and Don'ts 23

Charles E. "Chick" Lewis .. 23

"Penthouse" Soundheads 23

IP-IA Radio Hams 24

Eye Doctors and 3-D 24

IA Obituaries 25

Book Review 25

New Products for the Industry 26

Everyday Science 27

M-G-M, Paramount Develop New Camera 28

News Notes

Technical Hints

Miscellaneous Items

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MONTHLY CHAT

IP URGES projectionists to get behind the Christmas Salute fund campaign for the Will Rogers Memorial Hospital. We think the hospital has done, is doing now, and will do in the future a magnificent job in caring for those in our industry inflicted with tuberculosis

More than one projectionist, now working usefully and happily, owes his life to Will Rogers Memorial. The hospital is uniquely our own, giving free care to anyone in show business whose misfortune it is to be a victim of TB.

However, we have a bone to pick with a top executive of the Will Rogers board —and with his speech on behalf of the hospital before the Theatre Owners of America in Chicago.

The gentleman, who should know something about public relations but who obviously knows very little, told his luncheon audience in Chicago about the hospital's new research laboratory. Scientists there, he said, have discovered a new antibiotic holding great promise in the treatment of tuberculosis. He said that $30,000 was needed for its development, a sum beyond the hospital's immediate resources

At this point the gentleman made an amazing statement — a statement so startling in its implications that your IP representative could hardly believe his ears.

The hospital board, he said, was going to be a dog in the manger. Research on the new drug, with its promise of life for thousands now dying of tuberculosis, has stopped until funds are available to carry on. The hospital, he said further, would not go outside for research funds because the motion picture industry had no intention of sharing the glory should the new drug prove effective.

"Think of the public relations value to our industry," he said, "if our own Will Rogers Memorial Hospital can bring out a cure for tuberculosis?"

IP wonders if TB sufferers, including patients, some of them projectionists, in the Will Rogers Hospital, will appreciate that kind of public relations?

May we respectfully suggest that the hospital's myoptic board get in touch with Dr. Esmond Long, chief of research for the National Tuberculosis Association, and talk the thing over. Maybe something can be worked out whereby that $30,000 may be obtained — and whereby that jealously desired "public relations" may be safeguarded as well.

Meanwhile, let's be charitable and assume that the hospital's spokesman at Chicago didn't know what he was talking about. And let's go all out in support of the Christmas Salute.

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VOLUME XXVIII NOVEMBER 1953 NUMBER 11

Hints on Handling Magnetic Soundheads

Simple adjustments can keep a show going pending the arrival of a service engineer. How to correct sound loss due to worn heads and how to demagnetize and care for sound equipment.

By C. A. TUTHILL

PRESENT MAGNETIC sound units require, in theory at least, little attention from the projectionist. However, the immediate future, with CinemaScope installations increasing at a rapid rate, will see important changes and, just as the keen projectionist knows his separate reproducers and his optical sound, so will he want to know his four-track units—and how to handle them.

While some "penthouse" manufacturers assert that their units require no adjustment nor attention following installation by engineers, experience has shown that this, to put it conservatively, is not always a fact. Projectionists will figure out quite easily why the engineer takes the steps he does during alignment, including a thorough demagnetizing of the entire equipment.

It is realized by IP that there is no substitute for a good service engineer, equipped with the proper tools for his job. However, there is always the question of what to do "before the doctor comes" when a real emergency arises. It is for this reason that we attempt here to give some basic information about magnetic sound reproduction and to tip off projectionists to some of the tricks of the electronic trade.

Show Stops Are Rare

It might be mentioned, too, that show "stops" are rare due to failure of magnetic equipment. For example, soundhead clusters wear rather slowly and there is plenty of warning before sound goes really bad. The same "warning time" is usual in the case of other troubles.

Theatre projection with magnetic sound tracks presents no really complex problem. Reasonable care of the equipment, plus use of a few preventive maintenance tricks as outlined below, should net good magnetic sound reproduction. Since amplifiers, equalizers, faders, horns and crossover networks are familiar to men in the craft, emphasis here is placed on the newer magnetic facility.

A magnetic pickup, or reproducing head, is simply a rate-of-change unit. In other words, voltage output from the magnetic head is proportional to the rate of change or flux emitted from a magnetic film track. Furthermore, the amplitude of voltage output is proportional to frequency. This is true because, for a given distance along the film track, the rate of change for a high frequency far exceeds that for a low frequency.

The above facts account for the 6-decibel-per-octave rise of the magnetic track characteristic shown in curve "AA" in Figure 1. The rise is even greater in the lower frequencies.

To put it differently, it is known that the amplitude of the output signal is proportional to the frequency of the recorded signal. Thus, when the frequency is doubled, output amplitude is also doubled. Since doubling a signal voltage is the same as raising it 6db, output from a magnetic track raises 6db-per-octave.

These basic laws are briefly reviewed to clarify the necessity for equalization as represented by curve "DB" (Fig. 1). For the normal speed of 90 feet per minute, the magnetic curve continues to rise to approximately 4,000 cycles whereupon serious demagnetization and slit losses occur. Slit losses in this case are due to limitations of the magnetic gap.

Basically the limitation is defined by the fault which occurs when the very short wavelengths of the upper high frequencies are of the same order of magnitude as the limit of resolution of the gap itself.

A second cause for the rapid roll-off above 4,000 cycles (See Fig. 1) is self-demagnetization. To put it simply, if not quite accurately, myriads of ultra-microscopic magnets, crammed closely together within the coating strip on the sound track, resist further decimation. They become so small, for the higher frequencies, that they literally demagnetize themselves.

Thirdly, the value of the supersonic bias used for recording is constant. The value of the tiny high frequency modulations in the track varies and often is far less than that of the constant bias. A partial erasure is the direct result. The need for equalization during projection (and on this one you *can't* wait for an engineer) is obvious.

Significance of Oxides

Iron oxides used for sound tracks differ and their significance should be realized. Hollywood studios adjust their supersonic bias to a value which is critical for a specific oxide. Nevertheless, projectionists will find that frequency response and recorded levels will vary with oxides. Response may be spot-checked by ear or by comparison with a test film. Levels are easily checked by a short run before show time. Check a quiet dialogue section; *title music may be souped up.* Differences as great as 12 decibels have been experienced between dissimilar oxides. When, and if, a sneak preview comes your way, get the facts from the studio engineer. He should know the proper fader setting. It's a horrible thought but, without standardization, the future may see as many choices of oxides as the photographic industry now offers in choices of film base.

The Society of Motion Pictures and Television Engineers, as well as other organizations, is already at work to establish standards relative to such developments. Oxides and binder combinations are being developed which even now show a decrease in magnetic head wear. Gains have been made to reduce the present attraction of dirt particles through frictional static while your machine is running.

Program Level 'Drop-Outs'

Momentary program level drop-outs now occur occasionally. These are more serious for higher frequencies because of the lesser signal magnitude. Any small irregularity in the pigment of present coatings, such as an oxide concentration or an imbedded particle of dirt, either of which protrudes from the normally flat surface of the track coating, will separate the track from the soundhead sufficiently to cause a magnetic drop-out. When we realize that present coating may average only five or six ten thousandths of an inch in thickness, we may be grateful for today's accomplishments.

To this point we have considered oxides only as regards sound. Interesting new developments show that pictures, as well as sound, can be carried on magnetic tracks. RCA recently previewed magnetic television picture transmission from coast to coast. No other recording method offers the extreme fidelity demanded for reproduction of the far greater spectrum required for picture.

One basic maintainance requirement for projectors running magnetic film tracks is periodic de-gaussing, another term for demagnetizing the equipment. Any machine parts which constantly contact magnetic tracks also became magnetized. The track field, normally intercepted by the pickup head, spews its permanent lines of force into all other projector parts contacted. Present machines are constructed almost wholly of ferromagnetic metals. Future units may use bronze or non-magnetic alloys to avoid this condition.

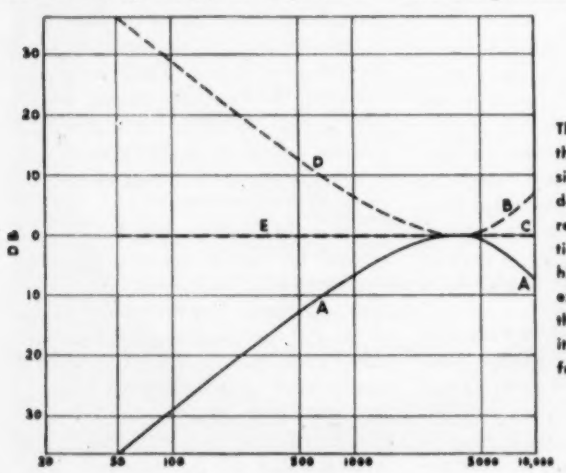

FIGURE 1

This graph, referred to in the text, shows the necessity for equalization of the decibel output in magnetic reproduction during projection. Rate of change in the high, frequency range far exceeds the change rate in the lower frequencies — and it is precisely in these high frequencies that most difficulties occur.

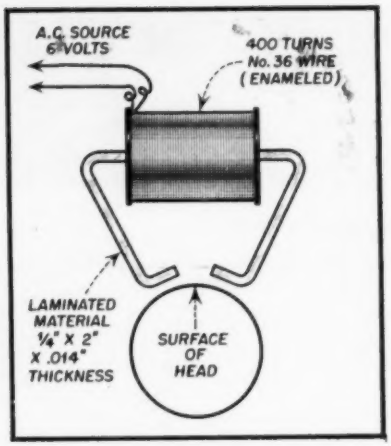

FIGURE 2

Caution: *Remove all magnetic sound track film from the projection room to avoid accidental erasure during the de-gaussing procedure. Also remove your wrist watch. A considerable field strength is necessary.*

Any six or ten volt 60-cycle supply provides an ideal power source for de-magnetization. It is the alternating field that does the trick. Values are not critical, but specific construction details will be given later for a typical de-magnetizer.

To test the efficiency of an improvised unit, place a cheap compass near the coil. If the compass goes crazy, you are in business. Once an adequate field has been checked, it is merely necessary to draw the active coil slowly across or along the shape of the units to be demagnetized. Over application is not possible. Parts will merely be neutralized more with each application.

Demagnetizing the Head

The pole pieces of a magnetic reproducing head exhibit a low retentive force. Otherwise noise from residual magnetism within the head will become additive to ambient noise within the magnetic record. Projectionists must

(Continued on page 33)

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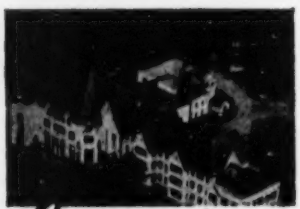

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Stereoscopic Projection and Photography

Solutions for many of the mechanical, optical and electrical problems that the projectionist faces when showing films in the present two-projector 3-D system are considered in the following article which concludes this series.

IV - *3-D Projection Room Problems*

By ROBERT A. MITCHELL

PROJECTION room changes and extra equipment needed for 3-D were considered in last month's instalment of this series. The present and concluding article continues the discussion with particular attention to the requirements made on the projector mechanism itself. Also considered are a variety of practical problems that the projectionist will encounter in setting up for and showing 3-D.

The choice of a projector for 3-D showings involves quite a number of important considerations. The mechanism must have a rear shutter to avoid undue heating of the film with high-powered arcs. The intermittent movement must be unusually rock-steady; and the lens mount should be large enough to accommodate F/1.9 lenses.

Some of the older projectors cannot take the modern fast lenses; but loss of lights is not too serious with F/2.5 lenses if these have anti-reflection coatings. But whatever lenses are used, they must match in focal length to within one quarter of one percent.

"Studio" Guide Rails

Many of the newer projector mechanisms employ "studio" guide-rails in an attempt to reduce side-weave and maintain constant lateral positioning of the film in the gate. Although studio guides may reduce the range of side-sway, they definitely introduce rapid irregularities into whatever sidewise movements of the film that may occur. Such movements of the film do occur whenever the guide rails have become grooved and whenever the film has shrunk below the standard 35-mm width of fresh stock.

It does not require a genius to appreciate the fact that, if the guide-rails be correctly spaced for fresh film, shrunken film will have a tendency to "bounce" laterally from one rail to the other. And if the rails be a few thousandths of an inch too far apart (as they usually are), all films will have a tendency to jiggle sidewise *except when the rails are misaligned in such a way that the film "brings up" snugly against one rail, but does not contact the other rail.*

The rapid sidewise jiggling effect can easily be seen when 3-D pictures are looked at without the 3-D glasses.

Nearly all of the more modern mechanisms have studio guide-rails — a feature, at least in the opinion of this writer, that should not have been incorporated into theatre projectors. However, the Motiograph AA has a sound solution of the side-weave problem. In this machine there are two flanged guide-rollers, one at the top of the gate and the other at the bottom, just below the aperture.

Take-Up Tension

The use of 5000-foot reels for 3-D demands a slightly greater take-up tension than is necessary for the regular 2000-foot reels. The familiar rule for adjusting the take-ups applies to the larger reels, of course. Place a fully loaded 5000-foot reel in the lower magazine and increase tension to the point where the reel of film readily starts turning of its own accord when the projector is switched on. Avoid excessive tension.

The 5000-foot magazines and take-up assemblies supplied by all of the well-known manufacturers are of excellent quality, and yet projectionists have actually been discovered squatting on the projection-room floor turning the 5000-foot take-up reels by hand! There is no sensible excuse for a dilemma of this sort unless the take-up belt comes apart or the reel-shaft key shears off. These, needless to add, are unlikely accidents.

The practice of having too little take-up tension, the writer believes, was a "fad" engendered by the now obsolete Western Electric universal bases. In these outfits the take-up hold-back sprocket was located in the lower magazine instead of in the soundhead. Because there were no rollers between this sprocket and the lower reel, the uneven pull of the film caused this sprocket to "sing" with a buzzing noise.

Singing hold-back sprockets usually indicate worn teeth or too much take-up tension — or both together. In the universal-base equipment, however, the sprocket sang exuberantly even when new and when the take-up tension was correct.

Fearing torn sprocket-holes and film-breaks, many projectionists operating on this old-style equipment chose to slack the tension to the point where the lower reel would have to be given a twirl by hand to start it turning when the projector was switched on. This unnecessary practice may have soothed projectionists' nerves by quieting the lower sprocket, but it should not be tried with 5000-foot take-ups!

Lamp mirrors and condensing lenses should be scrupulously clean and free from pit-marks. Both lamps should be adjusted for maximum and equal light-output. Differences in illumination can easily be detected by projecting blank light on the screen, rapidly switching from one machine to the other by means of the change-over shutter. If the Polaroid 3-D filters are in place, they should be removed before making this test. The intense heat of blank light wrinkles them, making them absolutely unfit for use.

Equalizing Light Output

In case the light-output of one projector is consistently brighter or dimmer than that of the other, check the voltage of both lamps and the current (amperes) consumed by each in normal burning. There are bound to be slight variations in current from time to time, but consistently unequal current-consumption indicates either

corroded connections or differences in the resistance of the ballast rheostats. Remember that faulty connections in the ballasts have the same effect as faulty connections in the lamps themselves.

If the electrical tests reveal no defects, it is possible that one of the projectors has an optically misaligned lamp requiring re-position of the lamphouse. But if the optical alignment of the projectors seems satisfactory, the inequality of light is very likely caused by differences in the focal lengths of the two mirrors. One of the lamphouses may have to be moved an inch or two toward or away from the picture head if there is no mirror-distance adjustment in the lamps.

When the projectors have been put into first-class operating condition and equalized for light-output, they should be lined up for exact superposition of fields on the screen. For this purpose two test loops made from a long black-and-white title cut in half may be used. The title selected for this purpose should contain no animated effects and be perfectly rock-steady.

Target Test Film

Better than this, however, is the Target Test Film prepared by the Motion Picture Research Council. This test film may be obtained either in large rolls or in short lengths for making loops which will run over and over, lasting on the screen for as long a time as the projectionist desires.

The test film is projected from both machines running at the same time and with both changeover shutters open. Chances are that the two identical images will not exactly coincide on the screen, thus making it necessary to shift one of the images both vertically and horizontally until they do.

First adjust the framer of one machine, racking the picture up or down very slowly until the two images correspond in the horizontal plane. This completes the vertical adjustment.

Then very carefully turn one of the projectors a trifle to the left or right to obtain exact superposition of the images. This horizontal adjustment is a difficult and delicate job when no means for making it have been provided on the pedestal-base. Users of the Super Simplex have it easy, for they may make the adjustment with the lens-shifting arrangement which was originally intended for speedy conversion from "silent" to "sound" picture-centering.

Placement of the Polaroid projection filters over the ports demands careful work. The metal frames holding these filters must be level in order to avoid the "ghosts" or double images which appear when the observer's left eye sees a trace of the right-eye picture, and *vice versa*. And to avoid spoiling the focus, each filter must be perpendicular to the optical axis of the projection lens. That is, if a projection angle exists, the bottoms of the filter-frames should slant out from the projection-room wall to match the downward tilt of the projectors.

It does not matter at all which projector has the "left" filter and which the "right." It is only necessary to show the Left Print through the left filter and the Right Print through the right filter. For convenience, however, it is recommended that the projector on the left have the left filter. In this way confusion is avoided on the part of relief men.

The reels of a 3-D picture are furnished in pairs, one reel of each pair being the Right Print and the other the Left Print. These are the two corresponding pictures of the "stereopair"; and the projectionist must guard against getting them mixed up when running the show.

Because one or both (usually both) of the paired stereoscopic pictures are photographed by reflection of the images into the camera lenses by means of diagonal mirrors, and because mirrors reverse everything, one or both of the two prints may have to be threaded up with the emulsion of the film facing the lens instead of the lamp. The projectionist must keep this in mind and guard against confusion if the shiny, blank side of the film happens to be on the outside of the roll when the film is correctly wound for showing.

Non-standard emulsion position is a bad thing because film in the aperture "pin-cushions" under the influence of heat, the emulsion side of the film assuming a convex form. When the emulsion faces the lamp, the picture in the aperture is slightly concave as it faces the lens. This enables the projectionist to obtain sharp focus over the entire area of the picture. When, however, the emulsion-position is reversed, and the picture bulges out toward the lens, it is impossible to get a "flat-field" focus — the picture on the screen may be clear in the central area, but the edges will be blurred.

This nuisance is entirely the fault of the studios. The duplicate negatives of 3-D pictures ought to be made by projection printing in an optical printer, the raw stock being positioned so that the release prints, always made by "emulsion-to-emulsion" contact printing from the dupe negatives, will have normal orientation.

Getting Maximum Clarity

When it happens that one or both pictures of a 3-D stereopair have the non-standard configuration, the projectionist need make no changes in his equipment other than refocusing the lens to obtain maximum clarity of the image. It is not necessary to modify the alignment procedure, and it is not necessary to change the focus of the soundhead optical tube.

Even when the optical axes of the projection lenses are not correctly centered, reversing the emulsion-position does not perceptibly shift the screen image. (The change in the position of the lens when the focus is changed is much too slight to produce misalignment of the images.) And the studios compensate electrically during the re-recording procedure for the loss of high frequencies resulting from poor scanning-slit focus in the soundhead. To repeat: the projectionist may ignore the emulsion-position of the film except when threading and when focusing the picture.

The inspection and repair of 3-D prints is frequently a troublesome and time-consuming process. When a third film carrying stereophonic sound-

IA MEN FORM SOUND GROUP

With L. K Brisbin, of Cinesound Co., Portland, Oregon, as first president, a new organization to be known as The National Alliance of Theatre Sound Engineers was organized in Chicago during the joint TESMA - TEDA - TOA conventions earlier this month.

Vice-president of the new group is Byron Savage, of Theatre Sound Service, Oklahoma City, Okla., with Al Suddeth, of Theatre Sound, Milwaukee, as secretary. All officers of the group are members of IATSE locals in their respective areas.

tracks is used it may be positively painful, as there are then three films to be kept in synchronism.

The paramount consideration is absolute synchronism of the left and right pictures. The two reels of the stereopair must have a frame-for-frame correspondence throughout their entire length. If the two superimposed pictures on the screen are out of sync by as little as a single frame, the 3-D illusion will be ruined whenever anything in the picture moves!

How is the projectionist to go about inspecting 3-D prints?

Place "Part 1, Left Print" on the rewinder. Rewind until a torn place or a patch is encountered. When repairing a torn place, insert exactly as many frames of black film as are removed from the picture film in making the repair. This is extremely important. Check up on your work by counting the number of frames between the footage numbers printed on the edge of the film. There should be 16 frames. (If a footage number is removed when making the splice, count the frames through two feet of film — 32 frames.)

Check on all good splices you find by also counting frames between footage numbers.

When this reel has been repaired, go on with "Part 1, Right Print," and then with "Part 2, Left Print," etc. Pay particular attention to the leaders, because if the picture starts off out of sync, you will have to shut down the show and thread up all over again while the manager and the audience grumble at the delay.

Patching 3-D Prints

Now, what about the black film you must use when patching these prints? It is best to purchase a roll of black film having thin frame-lines rather than use fragments of leader. The fat frame-lines of leaders and run-out trailers, or tail-strips, unavoidably show up along the top or bottom edge of the screen.

Even this procedure does not insure a perfect show. Every projectionist knows that a misframed splice in conventional prints sometimes escapes his notice, especially when such a splice occurs in a fade-out. Well, an out-of-sync splice in a 3-D reel may not always be discovered. Time is limited, and the projectionist works under pressure.

To avoid errors of this sort, it is always best to preview the 3-D production by actual projection before the first public performance. The doors of the theatre must be locked, and the management must be willing to compensate the projection crew for the extra time and work. The managers of first-class houses, however, will insist upon a preview showing. If such a showing is arranged, especially note the appearance of rapidly moving objects.

Catching Splice Errors

When an object in motion seems to approach or recede in a peculiarly unnatural manner, or to separate momentarily into a double image, *immediately* thrust a slip of paper into the take-up reel of each projector to mark the point where the trouble was discovered. Then shut the projectors down.

Remove the reels from the movie machines without tearing the films, take them to the rewinder, and rewind each (toward the beginning of the film) until the suspected out-of-snyc patch is found. Repair it and show the reels over again to make sure that the trouble has been corrected. Without a preview showing, the projectionist can only offer a hopeful prayer that the picture will stay in sync.

When making up the show, play the 3-D feature first. This is not good showmanship, but it is a necessary procedure in order to avoid an extra intermission in the show for changing reels. Coming Attraction trailers and the short subject must be attached to either the left or right last reel of the feature. There will then be only one break in the show — the mid-feature intermission.

Operating procedure for 2-strip 3-D is as follows:

(Continued on page 31)

Nord Single-Film 3-D Set for Release

COLUMBIA Pictures' announcement that the company will provide prints for the Nord single-film 3-D system makes this method of interest to projectionists, particularly those who work in smaller theatres where two-projector 3-D showings have not been practical.

The Nord system (described in the July issue of IP) places two stereo images side-by-side on one 35-mm film strip. Through on optical printing process, images are turned sideways on the film frame so as to fill the entire area of the frame. Robert A. Mitchell's article and an accompanying diagram in last month's (October) issue of this publication gave a detailed description of a beam-splitter projection system similar in principle to the Nord process.

The larger film frame of silent picture days, minus the soundtrack area, is used in printing the two images of the stereopair together on the same frame for the Nord process. This results in two images each with an aspect ratio of 1.75 to 1. This ratio is retained when the two superimposed images are projected on the screen.

The Nord projection unit is an optical device mounted in front of the projector lens on special brackets and not physically attached to the lens. It can be placed either outside or inside the projection room. Prisms and polarizing filters are contained within a metal enclosure where the light from the two images is split after leaving the projection lens and then re-directed toward the screen after each beam has passed through opposite polarizing filters. Very roughly, the device could be described as resembling a pair of prism binoculars working in reverse.

The system has a number of advantages over the present double-film method of projecting 3-D. The two most important are that only one projector is needed and that both images always retain exact synchronization. Also, the cost of making and shipping prints is lower because only one print is required. The film can be spliced in the normal way without worrying about sync.

A disadvantage of this system is equally obvious. The loss of light in the present two-projector system of 3-D is considerable when the light loss from the polarizing filters is added to that of the polarizing viewers. With the Nord system, this loss becomes more serious despite a slightly larger aperture because the polarizers still remain, but light is available from only one projector instead of two. It would seem that the Nord system is better adapted to a small theatre than a large one. According to the Nord company, the projection units are custom made for each installation and cost about $1,500.

Effect of Stray Light on Screen

By RAYMOND L. ESTES

Film Testing Division, Eastman Kodak Co., Rochester, N. Y.

The influence of stray light on the quality of projected pictures at various levels of screen brightness was discussed by Mr. Estes in a paper read at the April, 1953, Convention of the SMPTE. Some abstracts are presented here.

WHENEVER pictures are projected on a screen, the brightness range of the screen image from highlight to shadow is established by two limits:

(1) The brightness limit for the highlight is controlled by the light ouptut of the projector in combination with the size and reflection qualities of the screen; and

(2) The limit of darkness is established for any projection screen by its stray-light level. The deep shadow region in the screen image may approach, but certainly cannot be darker than, this lower limit set by the stray-light level.

Stray Light Defined

Stray light is defined as the brightness in foot-lamberts produced on a projection screen by any unwanted, non-image-forming illumination that may be superimposed upon the projection-screen image. Therefore, the maximum possible tonal range for any screen image from highlight to shadow will be contained between these two limits: the screen brightness* and the stray-light brightness. Generally speaking, the greater the difference between these limits, the better will be the conditions for obtaining good quality on the projection screen. Whenever the ratio of these limits is less than 300:1, picture quality for normal density prints will begin to change. A decrease in this ratio to less than 30:1 results in almost total degradation of the screen image. For these last conditions, one may rightly question the visual value of any motion picture for telling a story.

Sources of Light

The sources of stray-light damage to picture quality can usually be limited to one or more of the following:

(1) Darkened room admitting unwanted light from outside the room or from unsuitable light fixtures in the room.

(2) High reflectance of the walls and ceiling which reflect the screen light falling upon them back upon the screen. This effect from light-colored surfaces may be quite pronounced in narrow rooms and rooms with low ceilings, whenever the screen occupies a relatively large area at one end of the room, or has one or more sides of the screen in close proximity to a side wall or ceiling.

(3) The light produced by lens flare. In the past few years, the effect of lens flare has been reduced considerably by coating projection lenses, and it is not as great a source of stray light on the screen as formerly. For some lenses, the effect of coating has been to reduce the flare light from the lens by more than two times. Even so, scratches, dust and fingerprints on projection-lens surfaces may cause a large amount of flare light. For outdoor theaters, dust and dirt on projector lenses have to be removed at frequent intervals. Great care should be taken in this operation, because the high grit content in the dust will easily damage the lens surfaces.

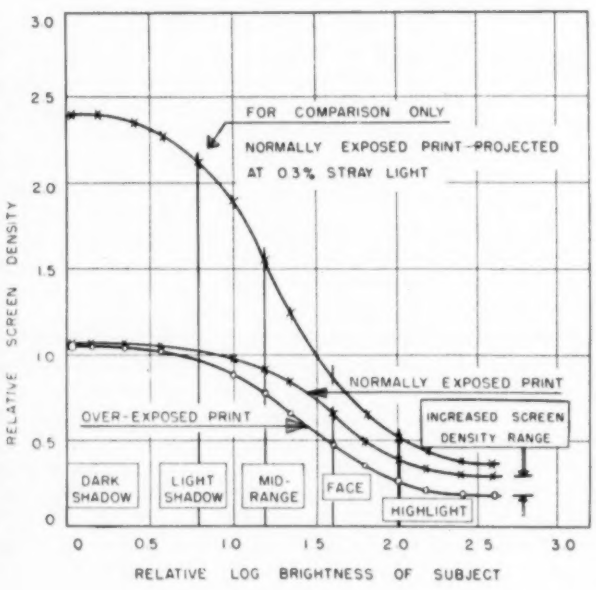
(4) Where fairly long distances are involved between projector and screen, scattering by particles in the air gives rise to non-image-forming light which may set a minimum stray-light level on the screen, below which further modifications in theater design and optical equipment cannot be effective.

(5) Moonlight, skylight, scattered light from the projection beam and other sources of illumination, all combine to make up the stray-light level on the outdoor or drive-in theater screen.

In a desperate attempt to avoid failure where stray-light levels were high, it has frequently been suggested that specially timed, lighter-than-normal prints are the answer. This unfortunate situation needs to be looked at in a very careful manner because it is full of booby traps.

In lower section of the illustration accompanying this article, tone-reproduction curves at 10 percent stray light are compared for a normally exposed print and a print made intentionally lighter than normal in an attempt to compensate in some degree for this high stray-light level. A slight gain in screen-density range has resulted from the lower highlight density of this lighter-than-normal print.

Furthermore, midrange density has been lowered so that it can be distinguished from the maximum densities. Yet, this slight gain will not



Results obtained when an over-exposed print is used to counteract excessive stray light on the screen are shown at the right diagram. The figures on the right for relative screen "density" refer to the ratio between the brightness of the screen without film in the projector compared to the brightness of an image on the same screen. The greater this contrast, the sharper the picture. The two lower curves are for a normal and an over-exposed print projected with 10% stray light on the screen. The upper curve, shown for the sake of comparison, is for a normal print at 3% stray light.

* American Standard Screen Brightness for Motion Pictures, Z22.39-1944. The brightness at the center of the screen for viewing motion pictures shall be 10 plus 4 minus 1 footlambert when the projector is running with no film in the gate.

Highlights of the TESMA-TOA Show

By FREDERICK HODGSON

THE TRIPLE convention in Chicago this month of TESMA, TEDA and TOA* resolved itself into a knock-down, drag-out battle between the little guy and the big fellow, with Twentieth Century-Fox rolling with the punches.

Projectionists who took in the circus, held in the Conrad Hilton Hotel, looked goggle-eyed at some of the new equipment, sniffed the popcorn on the trade show floor—and rolled in the aisles at some of the things said by exhibitors—and others—during the business sessions.

Before we get into the part that particularly interests projectionists (technically, that is!), we'll do a quick rundown on the general scene, the thinking—and the groaning—of the 4,000 or so exhibitors, engineers, technicians, manufacturers, salesmen, lobbyists (when one deals with Spyros Skouras one has to be a lobbyist) and others who thronged the halls, made the rounds of the scotch-and-soda circuit and griped at the general sessions.

By all odds, the trade show was the biggest and best in the history of the motion picture industry. The smell of hot dogs, roasted peanuts and singed Skouras was all over the place. Spyros Skouras and his merry men do not singe easily.

The wails of small exhibitors were heard far into the night. Any projectionist unhappy enough to have heard an exhibitor wail will know the teeth-on-edge quality of that melancholy sound.

What did they wail about? For one thing, they wept for pictures they did not have. Product, they want! Then they sobbed that Fox was driving them out of business, giving "The Robe" to the big circuits and *giving the business* to the little guys. IP admits that they have something there.

Also, they yipped about being forced to buy expensive new equipment, from screens to "penthouse" reproducers—and they wanted to know

(Continued on following page)

* Theatre Equipment and Supply Manufacturers Association, Theatre Equipment Dealers Association and Theatre Owners of America.

look very important when considering good picture quality. Picture quality is still very poor when compared to the normal-density print projected at recommended levels of both screen brightness and stray light. The curve at the top was included so that this difference could be easily seen. Obtaining lighter-than-normal prints is not a fruitful way of getting good picture quality on the screen. The desired improvement in screen quality should be obtained by making every effort to increase the difference between the screen-brightness and the stray-light level.

Drive-in Projection

On the outdoor screen, excellent to good projection conditions are not possible on a clear evening, even with the normal-density print, until approximately 50 minutes after sunset. Some drive-ins start picture projection at 9:00 p.m. Eastern Daylight Time during June and July in the Rochester area, and the remainder are in operation before 9:15 p.m. The earliest starting time is approximately 15 minutes after sunset, and the stray-light level on the screen is actually equal to the screen brightness from the projector. During the period of full moon, the stray-light brightness of the outdoor screen may climb to more than 1 percent for the average drive-in and probably will exceed 3 percent for those operating at screen brightness in the region of 1 ft-L. Under these conditions, the screen quality of dark prints, typical of murder-mystery films, is discouragingly poor.

Summary

There are four important points which relate to the screen quality of projected pictures. They are:

(1) Screen quality is largely dependent upon the ratio of limits established between the screen brightness and the stray-light brightness on the screen. The results show that the stray-light ratio should not be greater than 0.3 percent of the screen brightness.

(2) Stray-light problems increase as screen brightness is lowered. This is important to those who attempt to expand the size of the projection screen beyond the light-output capacity of the projection equipment.

(3) Dark scenes are affected more severely by stray light than are light or normal-density scenes. The presence of very dark scenes is of some concern to managers of drive-in theaters where moonlight and other forms of stray light are a continual, uncontrollable problem.

ACKNOWLEDGEMENTS

The work described in this paper was done with the cooperation of a great many associates at Eastman Kodak Co. The theater survey was made possible by the interest of the Projectionists' Local 253 IATSE, the Stage Employees' Local 25 IATSE, the owners and managers of the Rochester theaters involved, and the cooperation of the SMPTE Screen Brightness Committee.

Guarantee Still Holds!

IP's contemporary, *American Cinematographer*, published a full-page advertisement not so long ago announcing the theft of valuable stereophonic sound recording equipment from the factory of Kinevox, Inc., Burbank, California. After listing details of the equipment, including the serial numbers, the advertisement carries this "Notice to Thief or Thieves":

"If the stolen equipment does not perform to your entire satisfaction, it may be returned. All Kinevox Equipment is Fully Guaranteed!"

TESMA HIGHLIGHTS

(Continued from page 15)

when all this was going to end.

On the 3-D front the picture was a bit brighter. One grand guy we know, Jackson Turner, sales manager for the Polaroid Corporation, was quite sad during the first two days of the show. Then came the news that "Kiss Me Kate" had hit the jackpot in stereo in three test spots and Turner became the happiest man in Chicago. As a result of the tests the Loew circuit, he told IP, had ordered a million pairs of Polaroid viewers.

No less than seven companies interested in the propagation of 3-D were represented at the convention, Polaroid, Pola-Lite, Nord, Stereocolor, Dorsett Laboratories, Moropticon and one with the intriguing name of Synthetic Vision, Inc. Nord's single-film 3-D system was the only one demonstrated and IP was impressed. We came prepared to scoff and remained to applaud. We expected bad light but were amazed to find that Nord's "beam splitter" system (the Nord people don't like that term) did deliver sufficient illumination at the screen.

3-D Exponents Busy

An indication of the "push" that the 3-D people are giving their favorite product is seen in the fact that Polaroid, Nord and Moropticon, the latter working with Matty Fox and his Pola-Lite corporation, are offering free-for-nothing gifts to theatres to induce them to play 3-D.

On the show floor, the most interesting exhibits were of the big new projection lamps designed to pour out huge amounts of light needed by the new processes. New projectors were on display, beautiful pieces of machinery to our avid eyes.

However, to IP the most important part of the whole show was the business side, when exhibitors raked into Twentieth Century-Fox like crazy. Spyros Skouras roared right back. At another session a panel of experts, including Earl Sponable, Mr. Skouras' right hand man on technical matters, faced a grand ballroom-full of theatre owners, mostly little guys with their backs to the wall and their hands in their pockets.

Aspect Ratios Again

The showmen wanted to know if Fox would let them mask CinemaScope down from the 2.55 aspect ratio set by Skouras ukase. Would it be okay, they demanded, if they cut it to 2 to 1?

Everybody gasped when they heard Mr. Sponable say he "thought it would be okay"—adding that he wouldn't want to see them cut the ratio any more than that.

Editor's Note: According to reports from IP's espionage agents on the Coast "How to Marry a Millionaire", the second CinemaScope picture, was previewed on November 3 at the Fox Wilshire Theatre, Beverly Hills, with a picture size of 50 feet by 23 feet, an aspect ratio just a trifle more than 2 to 1. Also reports have it that "The Robe" is playing in San Diego on a 43-foot by 22-foot screen, also just a fraction above the 2 to 1.

However, over and above all the shouting and the mighty spectacle of Leo, the Lion, at bay, there were amusing sidelights to the big show.

For instance, IP has realized for a long time that exhibitors knew very little about their equipment, depending on their projectionists, or on their suppliers and service companies for technical guidance. We did not realize exactly how abysmal exhibitor ignorance was until we listened to them.

One fellow started a long debate on drive-ins by demanding that the TOA bring pressure on automobile manufacturers to eliminate "Polaroid" windshields. Fellow theatre owners nodded in sage agreement as the fellow said these "Polaroid" windshields were lousing up 3-D in his theatre.

Another exhibitor, talking about screens, warned exhibitors not to make the mistake he made. Not wanting to go to the expense of painting his screen aluminum, or buying one of the new screens for his drive-in, he figured that light gray looked like aluminum—so he had his screen painted light gray. It didn't work.

Another fellow, grousing about the cost of new equipment, put a curious question to a group of top flight engineers at another session. His theatre is in an area now being converted from direct to alternating current. His chief projectionist, he said, told him he needed rectifiers and he wanted to know if that were true. Huh?

In all the talk during the six-day shindig IP heard but one reference to projectionists—and projectionists are the people who have to use all this new-fangled stuff! The one reference was made by Bob O'Donnell, of the Interstate Circuit, Dallas, Texas. O'Donnell told of bringing 300 projectionists into Dallas for instructions and demonstrations on 3-D projection.

An Echo from Chicago

THE FOLLOWING letter written by Walter Reade, Jr., president TOA, to Spyros P. Skouras, 20th Century-Fox.

November 10, 1953

Dear Spyros:

I wish to take this opportunity to personally thank you for a very pleasant evening in the theatre yesterday. I certainly enjoyed "How to Marry a Millionaire" and I did think that unquestionably it will have a good boxoffice success throughout the United States.

I do, however, also wish to take this opportunity to say that I am more convinced than ever of the limitations of stereophonic sound. Including the symphony orchestra, which was the introduction and the end of the feature, I cannot honestly say that anything but a good fidelity and high quality sound system was noticeable. I am convinced that any theatre that is equipped with a good and high-quality sound system, on a single track, could have played this picture on a 2.55 screen—and with an equally good audience reaction.

My reason for writing you today is that not only am I convinced that the position which you so definitely stated concerning stereophonic sound at our convention last week in Chicago, is untenable, but that you are rendering a great disservice to exhibitors, large and small, by compelling capital outlay on what may well be useless and unnecessary sound equipment (amounting to millions upon millions of dollars) at a time when so many of them could better utilize these same funds for so many other important and necessary improvements within the field of exhibition.

Sincerely, WALTER READE, JR., *President, TOA*

To the Editor of IP:

I was very well pleased with the "Monthly Chat" in the September issue. Everything is true that was mentioned and I am in full accord. Too many of the faults of the motion picture industry are due to the eagerness of some theatre owners and producers who want to get ahead of the other fellow by trying to be the first with anything new that comes out.

That happened with 3-D. Big campaigns stressed that the characters would come off the screen and into the audience. That may be true to some extent but people were led to expect the impossible. I have had quite a few complaints from customers who expected the entire picture to appear as though they were right in with the action and that everything would come off the screen at them.

These things are hard to overcome or to explain to the paying customers. Each new process takes time to perfect, but when producers and exhibitors overadvertise these things people expect to see what they pay for and, once disappointed, it's hard to get them back into the theatre.

I would like to have permission to reprint your "Monthly Chat" in our papers in the territory covered by Lewiston Local 636.

JOHN MARKS
Secretary, Local 636
Lewistown, Penna.

To the Editor of IP:

The "Monthly Chat" in the September issue certainly hits the nail smack on the head. (*The "Chat" did some plain talking about exaggerated masking.* Editor) Every projectionist must go along with any and all schemes desired by the exhibitor, of course, but any projectionist who advocates trimming height from the standard aperture to produce a simulated wide-screen picture format ought to be punished by being forced to watch the pictures in his own theatre from a front-row seat. Then, perhaps, he would understand what terrific ocular punishment he is inflicting on his audiences by magnifying the image by means of short-focus lenses and cutting off large areas from the top and bottom.

Standard movies are photographed to appear to advantage in the standard 3:4 format — something is bound to be lost when the height of the frame is drastically reduced. Then too, motion is exaggerated when the width of the screen is expanded by using lenses of short focal length. It is not for nothing that most patrons avoid sitting in seats close to the screen. It is tiring to the eyes to follow moving images dashing from one edge of a wide screen to the other. By sitting far away from the screen, movie patrons "take in" the whole picture with minimum exertion of the eye muscles. Expanding the screen will serve only to force patrons further back, leaving the seats in the front half of the auditorium practically empty.

Movies photographed for CinemaScope and other wide-screen processes are carefully "composed' pictorially to avoid the rapid, screen-width movements which result from action photographed too close-up for comfortable viewing. Standard movies, on the other hand, are composed for the standard-screen format; and this format cannot be tampered with if the cameraman's work (work involving much careful thought and not a little genuine artistry) is not to be ruined. Projectionists can appreciate the fact that any image-unsteadiness which may be present in either the film-photographs or in the functioning of the intermittent unit of the projector is magnified by lenses of excessively short focal length. These lenses also introduce focusing difficulties and increase the bad effects of the film-flutter in the aperture.

It has been rumored that cinema-photographers are being instructed by producers to compose their standard format pictures in such a way that significant pictorial details are kept far away from the top and bottom of the picture in order to permit projectionists to simulate wide-screen pictures with masking if they care to do so. This procedure is just about the most effective way I can think of to stifle whatever originality and creative freedom the professional motion picture cameraman may have left in his increasingly mechanical and stereotyped art. How short sighted of me to have assumed that, with the advent of CinemaScope, Hollywood had exhausted the list of possible cinematic boners!

One of the worst features of wide-screen projection, especially in theatres where steep projection angles prevail, is the curved screen. Even though the concavity of the CinemaScope screen is not so deep as that of the specially constructed screen used for Cinerama, it nevertheless presents a departure from flatness sufficiently pronounced to distort the picture for observers located at some distance from the axis of the projection beams. The cameraman can conceal this defect of the process by avoiding unbroken horizon lines and other straight non-vertical lines, but this amounts to one more fetter added to the large number of cinematographic shackles that have bound the art of the motion picture hand and foot and have progressively dehumanized it into a machine-made product. And the wideness, in itself, of the wide-screen is a further congealing factor in a once enchantingly fluid dramatic medium.

All of my experience showing pictures leads me straight to the conclusion that the movie-going public does not desire physical hugeness in screen images. It is true that the screens in many theatres are a trifle too small, but to enlarge them to a satisfactory size is a comparatively minor matter. The average patron wishes to exert only a minimum of visual effort in viewing pictures, and he demands bright, sharp, undistorted images. Most of the effort involved in seeing moving objects must be made for him by the camera and the projector, instruments for "predigesting" visual experiences. For this reason the visual and aural stimuli emanating from the screen must be concentrated in a limited area. To exceed these bonds is to distract and irritate.

ROBERT A. MITCHELL

Editors Note: We like Mr. Mitchell's habit of coming right out and saying exactly what he thinks — particularly when we agree with him! While IP is not as strongly opposed to wide screens as is Mr. Mitchell, provided the aspect ratio is kept within reasonable limits, we think very definitely that exaggerated masking is nothing short of criminal. As to short focal length lenses, particularly of the extremely fast variety, our correspondence from projectionists over the country is heavy. Some of the boys ae having real trouble. IP hopes to have an article on this very shortly. Meanwhile on the business of wide screens. Can anyone imagine, for example, Paramount's Academy-award winner "Lost Weekend" in CinemaScope?

Heart Doctor Uses 3-D

Apparatus designed to give medical specialists third dimensional pictures of the heart in action has been developed at the University of Mississippi. Known as the "stereovector-cardiograph", the instrument has a five-inch cathode-ray tube that emits two separate beams observable on a screen.

IN THE
SPOTLIGHT

BUCK passing in the industry is an old story. The latest concerns the lagging interest shown by the movie-going public in 3-D features after the initial presentations. Projectionists are being blamed for the 3-D flops throughout the country—they are accused of everything from ignorance of their craft to sheer stupidity in the presentation of pictures in this medium. Whatever the mistakes that might have originated in the projection room, the public's indifference to 3-D pictures can in large measure be laid to the haste of Hollywood studios to produce pictures in this medium. The eagerness of the producers to be there "the fustest with the mostest" is probably the underlying factor for their haste in bringing out a product that was not quite "ripe enough to be plucked."

Also, the Polaroid viewers used with the early 3-D movies left much to be desired. They were poorly made and clumsy to handle—much to the annoyance of the movie patron. We understand, however, that the Polaroid people have put out new 3-D spectacles that are both comfortable and easy to handle. These new viewers are now being distributed, a major circuit having purchased 1,000,000 pairs for the showing of "Kiss Me Kate" in its theatres. The excellent reception throughout the country of "Kiss Me Kate" in 3-D, with the use of the improved viewers, plus a better understanding of the 3-D process by projectionists should go a long way towards reviving the public's interest in 3-D films as an entertainment medium.

Albert F. Ryde (right), business representative for Buffalo Local 233, is shown presenting a gold honorary membership card in the Buffalo Local to Lester Isaac, general manager of Cinerama Theatres. In making the award Ryde praised Isaac for the fine business understanding he had created between Cinerama and the projectionist craft in every city where "This is Cinerama" has opened.

• Eddie Miller, IA representative and business representative for Local 279, Houston, Texas, was elected chief barker for the Variety Club of Houston. Eddie is very popular in motion picture circles in Texas. This latest honor is but one of many that have been conferred upon him by his associates in the industry.

• The IA and the Association of Motion Picture Producers on the West Coast recently concluded negotiations on a four-year contract retroactive to October 25 last. This new pact provides for a 5% increase for IA studio workers and is subject to the reopening of negotiations on wage scales and working conditions at the end of the second year. Anouncement of the agreement was made jointly by IA President Richard F. Walsh and Charles Boren, labor negotiator for the AMPP. President Walsh, who flew to the West Coast to take part in the negotiations, stated that details of the agreement would be withheld until they were ratified by the various Local Unions concerned.

• Lester Isaac, former director of projection for Loew's, Inc., and now general manager of Cinerama Theatres, holds honorary membership in 48 IA Local Unions throughout the country. Local 224, Washington, D. C., is Isaac's parent Local.

• Social security pamphlets containing information of importance to all union members, particularly those nearing retirement age, may be obtained free of charge at local security offices, or by sending 10c for each copy to the Superintendent of Documents, Washington 25, D. C.

• Conrad Krieger, secretary of Local 586, Grand Island, Nebr., was elected fourth vice-president of the Nebraska State Federation of Labor, and Alvin Kostlan, member of Omaha Local 343, was re-elected sergeant-at-arms.

• Local 105, London, Ont., Canada celebrated its 50th anniversary early this month at a banquet attended by its entire membership. A highlight of the affair was the award of a gold membership card to William Newman, charter member of the Local. Hugh Sedgwick, IA 7th vice-president and former business representative for Local 303, Hamilton, Ont., made the presentation on behalf of Local 105.

Out-of-Town Visitors

• Walter Roberts, Local 178, Salisbury, N. C., dropped in to say hello to IP's staff. We had a very interesting chat with Russell Ruben, member of Local 199, Detroit, Mich., discussing the merits of the various screen techniques. Ruben attended the recent TESMA - TEDA - TOA convention in Chicago and he was quite impressed with the exhibits.

• The industry turned out enmasse, it seemed, to take part in the recent joint TESMA-TEDA-TOA convention at the Conrad Hilton Hotel in Chicago. A detailed report of the convention proceedings, which were extremely

Polaroid's technical representative, Stanley Cohen (center), explains how to properly use the sync monitor and 3-D filters to Harvey Hill, Jr. (left), and Luther Clark (right), projectionists at Interstate's Majestic Theatre in Dallas, Texas. Hill is secretary of Dallas Local 249.

lively, to say the least, will be found elsewhere in this issue. This department will concern itself chiefly with a few personal observations.

National Carbon Company's headquarters seemed to be the gathering place for visitors from all parts of the country. We met there exhibitors, manufacturers, and projectionists—we heard all sorts of accents from the lazy Southern drawl to the broad "a's" of New England. In the usual *NCC* fashion at such gatherings, refreshments were varied and plentiful. Bill Kunzmann was back at his old job of glad-handing all the guests, ably assisted by J. R. Johnstone, Paul Reis and others.

The Motiograph crowd also went all out to make their guests welcome. Fred and Thor Matthews, when not in the exhibition hall showing off their wares, were at the Motiograph quarters greeting their many visitors, which was in itself a full-time job.

The International Projector and National Theatre Supply delegation headed by Admiral Tompkins and Arthur Reyer for IPC, and Walter Green for NTS, were about the busiest people at the convention handling the crowds that swarmed into their joint booths.

Hal Huff was on hand ready to demonstrate and extoll the virtues of his exhibits. Assisting him were his charming wife, Edith, and Alonzo Bennett, secretary of Local 521, Long Beach, Calif. We were very glad to renew our acquaintance with Clyde Cooley, secretary of Local 343, Omaha, Nebr., who was accompanied by his very attractive wife. Nat Golden, director of the Scientific, Motion Picture and Photographic division of the U. S. Department of Commerce; Mary and Clarence Ashcraft, of Ashcraft Mfg.; Wm. Hausler, Century Projector; Oscar Neu, Neumade Products; J. K. Elderkin, Forest Mfg., and M. D. O'Brien, director of projection and sound for Loew's, Inc., were but a few of the many old friends we met and chatted with at the convention. Space limits our mentioning the many others we had the good fortune to meet during the week—all in all, it certainly was good to get together again with our many friends in the industry.

Herman Gelber, president of IA Local 306, New York City, is shown on the left chatting with Herbert Barnett, president of the SMPTE, at the banquet which was the main social event of the SMPTE's semiannual convention.

• Cinerama is scheduled to open at the Warner Theatre in Pittsburgh, Penna., some time in December. In order to accommodate the three individual projection rooms that will be installed in the orchestra, the seating capacity of the theatre will be reduced to about 1700 from its usual 2200. A three-year contract with Pittsburgh Local 171 calls for a crew of 10 men.

• Two years of negotiations between Detroit Local 199 and Detroit exhibitors was finally concluded last month with an average $10 per week increase for the projectionists. The agreement calls for an immediate $4 per week increase, with a second increase for the same amount to become effective January first next; boosts in overtime pay bring the total average increase to $10 per week, per man. The contract runs for two years.

• San Francisco Local 162 recently awarded an honorary membership card to Robert O. Bemis, who is associated with the Walter G. Preddey Theatre Supply Co. of San Francisco.

25 Years Ago—November, 1928

• John Pane-Gasser, member of Chicago Local 110, made his operatic debut in Verona, Italy, where he scored a sensational success singing the leading tenor role in the Puccini opera "Turandot." He financed his musical studies by working as a projectionist in Chicago theatres . . . Boston Local 182 was exonerated of charges of conspiracy brought against the Local membership by member John Sweetman. Sweetman charged that the Local "deprived him of his membership rights and benefits and with keeping him out of employment," and asked $25,000 damages . . . The IA General Executive Board convened at the Roosevelt Hotel in New Orleans, La. . . . Local Unions were alerted to be on the watch for a party by the name of Weaver, who posed as a 4th vice-president of the Alliance. He was particularly active in Albuquerque, New Mexico, and Locals in that area were warned to pick up the "phony" dues card he carried if he appeared in their jurisdiction . . . Combined Convention Proceedings, beginning with the first convention held by the IA in Chandler Hall, Boston, Mass., July, 1895, and including the most recent convention, the 29th, at the Tuller Hotel, Detroit, Mich., July 1928, was offered to the membership at $8.50 per copy. This work opened with a history of the Alliance since its inception in 1893 and outlined the progress and growth of the organization with each succeeding convention.

PERSONAL NOTES

HAROLD P. SHERER, for the past several years vice-president in charge of engineering for the Hertner Electric Co., Cleveland, has been elected executive vice-president of the company. With Hertner for 13 years, Mr.

Harold P. Sherer, executive vice-president of the Hertner Electric Co.

Sherer is a graduate of Ohio State University in electrical engineering and is well known in the motion picture field. The Hertner company is a subsidiary of the General Precision Equipment Corporation, New York.

GEORGE E. LAWRENCE, of Rochester, N.Y., has been appointed deputy director of the Scientific, Motion Picture and Photographic Products Division of the Business and Defense Service Administration, Department of Commerce. Lawrence, an Annapolis graduate on loan to the government from the Bausch & Lomb Optical Co., Rochester, will serve under Nathan D. Golden, director of the division.

What's Your Problem?

Projectionists whose problems appear below will each receive a $3.00 check from IP. We'd like to know "what's YOUR problem?"

Q. We have a problem. One lamp of our equipment, Brenkert Model N, using 8-mm and 7-mm carbons, has a decided flicker. All connections have been checked. We have RCA rectifiers of 70 amp. capacity. We pull 63 amps. Proper voltage. G.E. emergency rectifiers are of 50 amp. capacity. Carbons for the emergency setup are 7-mm and 6-mm. We get the flicker on either setup. Our other two projectors do not flicker. We can convert our third projector using rectifiers but do not get the flicker there. It is between conversion panel and lamp. We have cleaned the insulation points on the lamp in case some foreign matter at this point could have caused the flicker. The same thing happened once, years ago. It is not caused by drafts. Electricians have been in, and both projection crews have checked, but we cannot find the cause. P. A. Wills, Local 482, Rialto Theatre, Champaign, Ill.

A. Brother, that's a job for a service engineer. No ordinary electrician (we mean the sort of guy who fixes electric irons or puts in house wiring) can, as we see it, put his finger on your trouble. From here, and from the information you give us, you seem to have rectifier trouble affecting your shutter phase. Where is your rectifier located in relation to the projector giving you trouble? How about carbon alignment? We have submitted your question to some of the top engineers (even took it to Chicago with us and popped the question there) and we get the same reaction: "Looks like rectifier trouble" and "Call in an engineer."

Q. Why are so many projector motor start switches installed (almost standardized) so that they are "off" when up and "on" when down when general practice and underwriters rules are the opposite. Frederick J. Closser, Local 253, Rochester, N.Y.

A. This is determined largely by the location of the switch on your particular projector.: If the "on" switch position is up there is always the danger of accidentally causing a show stop by accidentally brushing against the switch. Hence, projector manufacturers often reverse the usual "off" and "on" switch positions. This is quite general in industry where an inadvertant switch-off could cause more trouble than would an accidental switch-on.

Q. In the September issue of IP magnetization of machine parts is discussed. It says that projector manufacturers urge demagnetization be done even with equipment using optical sound. Perhaps I should hang my head in shame, but in the 40 years that I have been a projectionist I have never heard of this and cannot see any reason why parts that might acquire a small charge could affect anything. The photocell transformer is very well protected against external fields and I should imagine that this is about the only component that might be affected by an extremely strong field. Again I request enlightenment and I would suggest also that we projectionists be briefed on the proper way to demagnetize sprockets, etc., if they are to be demagnetized every six months as stated in IP—I have a plate demagnetizer used to wipe off sound from 1,200 feet of paper tape. I wouldn't want to have it around any magnetic film! The same article mentions the use of film cement that does not dissolve the iron oxide material—do you know of any that will not effect this coating? Maurice Rushworth, Local 181, Chief Projectionist, New Theatre, Baltimore, Md.

A. Thanks a million for your letter. It is responsible for two special articles in IP, the first of these (Hints on Handling Magnetic Soundheads) appears in this issue. We have not printed your question on lenses because this will be answered in an article in a later issue. Your other major question is answered in Mr. Tuthill's article on magnetic apparatus. As to cements, most brands now on the market (some advertised in IP) will not harm magnetic tracks. Check with your Fox exchange on this.

Q. For years I have wondered why film is sent from the exchange "heads up" with a sticker "ready to show." Most projectionists want their film, especially new prints, on house reels. Why doesn't the exchange send the film tails up to eliminate the double rewind operation. This would encourage the use of house reels and save wear and tear on the edges of the film. A. L. Shavers, Local 279, Houston, Tex.

A. If you think you have troubles, how about projectionists in some exchange areas where film handling is so careless that some prints go out tails up with a sticker "ready to show"? This business of "tails up" or "tails down" is largely a matter of choice with each exchange. Usually, however, the prints go out to the theatres either way, depending on how the inspecting is done, on how the film is received from the theatres, etc. For example, if you show on house reels and rewind on the exchange reels, your film automatically reaches the exchange heads up. Inspection automatically reverses this and the next theatre gets that print tails up. IP has seen film come into an exchange, seen it stamped "okay" without inspection, then sent on its way to the next booking. Results, particularly with 3-D, are sometimes startling—and, as usual, the projectionist gets the blame.

Technical Papers Read At SMPTE Convention

Presented below are further brief abstracts of papers read last month at the New York City convention of the Society of Motion Picture and Television Engineers. These, IP believes, are of particular interest to projectionists. Other papers read at the convention were described in IP for October.

A FILM-PULLED, THEATRE-TYPE, MAGNETIC SOUND REPRODUCER FOR USE WITH MULTITRACK FILMS

J. D. PHYFE
RCA Victor, Camden, N. J.
C. E. HITTLE
RCA Victor, Hollywood

This paper describes a new type of sound reproducer which attaches to the top of standard 35-mm theatre motion-picture projectors. The unit permits elective playing of conventional photographic sound films by means of the usual projector-soundhead combination or magnetic tracks by means of the attachment. The film is pulled through the reproducer by the picture projector, thus eliminating the need for a separate interlocked drive motor.

By combining the ability to reproduce either photographic or magnetic soundtracks into one projector-reproducer assembly, a single film may be used for picture and sound using either type of soundtrack. Sound reproduction using the attachment is of excellent quality and falls well within Research Council recommendations for magnetic track reproduction.

A FOUR-TRACK, MAGNETIC, THEATRE SOUND REPRODUCER FOR COMPOSITE FILMS

S. W. ATHEY, WILLY BORBERG and R. A. WHITE
General Precision Lab., Pleasantville, N. Y.

A four-track, magnetic sound reproducer which mounts between the upper magazine and the picture mechanism of a standard theatre projector is described. Features include: minimum increase in overall projector height, no interference with normal

(Continued on page 30)

Pension Protection — Goal of Labor

Various methods of budgeting pension plans, with particular mention of certain dangerous practices, are considered in the following article, part of a series reflecting the official views of the AFL.

IV

BASICALLY, there are three alternative systems of budgeting and financing the cost of a retirement plan. These are (1) a so-called "pay-as-you go" approach; (2) a system of "terminal funding"; and (3) "full funding". They are by no means equally safe, equally economical, or equally beneficial to the workers covered by the plan.

The choice which unions and employers make, as between these three basic alternatives, is a very important one. It may well make or break the plan.

Pay-As-You-Go-Plans

The only purpose in describing the "pay-as-you-go" type of plan here is to enable unions to recognize and beware of it. A so-called "pay-as-you-go" plan is really not a "plan" at all. It is little more than an unsupported promise that if enough money happens to be available at the time a worker retires then he will start getting a pension.

Under this approach, the pensions that are promised to workers in the future are not regarded as a present liability. The pension bills that will eventually fall due are not reduced to terms of an estimated current cost and allocated to the present through a system of uniform, regular installment payments into a fund over the period prior to retirement, as they are in the case of a "funded" plan.

If, for example, four workers retire this year, and the "plan" promises them $100 a month at retirement, the employer — having made no advance provision for the payment of these benefits — will have to dig down into his pocket at the time and pull out $400 for a month's pension payments. If it just isn't there, then the employer will either find himself faced with a serious financial problem, or the workers will not receive their pensions and the employer will find himself faced with an equally serious "labor relations" problem.

Name Misleading

The term "pay-as-you-go" as applied to a pension arrangement of this type is a complete misnomer. It assumes that pensions become a cost item to the employer only at the time a pension benefit payment has to be made. Under every sound theory, the cost obligation is actually incurred at the time workers perform the services which entitle them to a certain amount of credit toward a future pension.

From the standpoint of comparative costs, there are three angles to consider. One is the fact that the total outlay by the employer will be greater under a "pay-as-you-go" approach, if he actually meets all his pension obligations, than it would be under a funded plan.

Under the latter system, compound interest will be earned by the regular, periodic payments made into a fund which is in turn invested in interest-bearing securities. These interest accumulations will pay a part of the pension costs which would otherwise have to be paid directly by the employer.

In answer to this, some employers may argue that they can earn a greater rate of return, in the form of company profits, by keeping money that would otherwise go into a pension fund in the business, mingled with all of the other assets and working capital of the company. They may compare the company's, say, 8 percent profit on invested capital with the 3 percent or 4 percent interest earnings of a pension fund.

Risky Investment

This may be all very well if the cost of a pension plan is regarded as "the company's money" until such time as a pensioner actually receives some of it in cold cash. However, it is the workers' money and they would be better off if it were more safely distributed than tied up in one particular company, whose

(Continued on page 28)

Bausch & Lomb Has New F/1.8 Lens

A new series of F/1.8 Super-Cinephor projection lenses designed to produce maximum brightness, contrast and sharpness, edge-to-edge, on all types of professional movie screens, is announced by the Bausch and Lomb Optical Co., Rochester, N. Y.

The lenses were developed by Bausch and Lomb engineers specifically to solve the problem of resolution at the outer margins of the screen and to increase the illumination, distributing it evenly. Tests have shown, the company said, that the new lenses, without sacrificing resolution and illumination in the screen's center, will greatly enhance these qualities on regular 2-D screens and also on the new types for CinemaScope, other wide-screen processes, and 3-D.

Above is one of the new Bausch & Lomb superfast F/1.8 lenses described in the accompanying story. Note the 3-inch focal length.

The extremely fast F/1.8 lens was installed in projectors at the Roxy Theatre in New York for "The Robe" showings in CinemaScope. Also installed at the Roxy were new heat reflecting filters, also developed by Bausch and Lomb, and adapters connecting the anamorphic and projection lenses.

The filters, polished discs that can be made of either pyrex or quartz, are coated on one side with alternate layers of magnesium fluoride and zinc sulfide. The other side has a single coating of magnesium fluoride. They are inserted in the projection system between the arc lamp and the film gate and, according to company engineers, transmit over 90 per cent of the visible spectrum but reflect back the infra-red heat producing rays.

The result of five years of research and experiments by the Bausch and Lomb Scientific Bureau, the new F/1.8 lenses employ five different kinds of glass. Two of these are varieties of extra dense barium crown glass, only recently perfected on a production basis in the B&L glass plant. These new glasses combine the optical advantages of both flint and older types of crown glass, without the disadvantages of either. The unusually white glass of the lenses, combined with a new design formula, eliminates color absorption and transmits the full color and brightness of the image, according to the company.

The lenses are available in a wide range of focal lengths, which will be expanded steadily in the coming months.

King Size Arc Lamp Due

Strong Electric claims unit can deliver 60,000 lumens
But no picture projection system exists that can use it.

AMONG the more interesting echoes of the big trade show in Chicago is the information that one top arc lamp manufacturer is set to go with a king-size unit the minute the picture business needs it. The projection lamp, now in the laboratory and engineering stages, is said to be capable of delivering 60,000 lumens, far in excess of anything ever made for the theatre.

Arthur Hatch, vice-president in charge of engineering for the Strong Electric Corporation, Toledo, Ohio, frankly admitted that such a lamp was in existence, adding that he was "sorry that anything had leaked out" about the monster lamp house.

"A few of the features of this lamp have 'leaked' in spite of our attempts at secrecy," he said, "and these have probably given rise to rumors of even bigger lamps to come. This simply adds to the confusion in the industry —and the last thing we want to see is confusion."

Manufacturers Meet

During the show a group of manufacturers, including Mr. Hatch, got together and talked over the whole industry buying picture. The concensus was that many exhibitors, particularly the independents, are holding off purchasing much-needed new equipment on the theory that new and startling developments are dead ahead, developments involving another big equipment revolution. This theory, the manufacturers held, was responsible for holding the equipment field pretty much at dead center in some departments. The theory was pretty well exploded at several of the TOA business sessions when experts from the producing companies were bombarded with questions from harrassed exhibitors.

One theatre owner shot this question at Earl Sponable, technical chief for Twentieth Century-Fox:

"I'm buying CinemaScope," he said, "and I want you to tell me if there's anything new coming up because I simply can't buy any more. I bought separate magnetic reproducers and now I have to throw them out. I've bought a new screen and I've bought new lenses. I've bought your 'penthouse' soundhead. When is all this going to stop?"

The answers from the dais, from Mr. Sponable, from Herbert Barnett, president of the SMPTE, and from others were flat denials that anything revolutionary was due in the immediate future, perhaps not for years.

Mr. Hatch, of Strong Electric, summed it up this way:

"There has at no time in my experience been a status quo in projection arc development. Usually we have the lamp of the future on the drawing board at the same time we are announcing a current new lamp.

"New developments in lamps are usually announced when there are changes in principles of projection, increases in light transmitting capacities of projectors and lenses, increases in the popular size of screen, or a further understanding of how to put more light on the screen without damage to the film.

Ready for Two Years

"As an example, we are now for the first time publicly showing our big, new Super '135' arc lamp. The lamp you ask about, the one delivering 60,000 lumens, we have had for almost two years.

"However, theatres, projection practice and associated equipment are not ready at this time to utilize a lamp of this type. For instance, the very size of the lamphouse is such that considerable attention must be

(Continued on page 27)

Victor Markets Portable 16-mm Projector

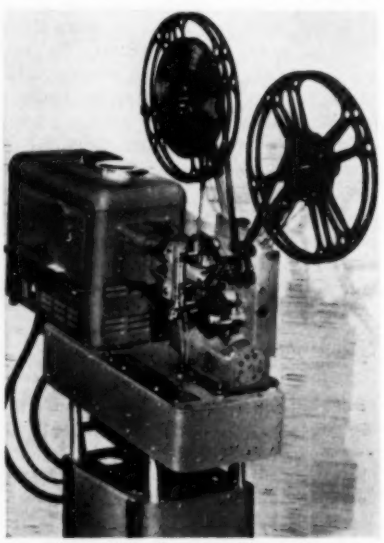
A NEW 16-mm arc projector, designed for portable use in school, church and other auditoriums and also adaptable for use by roadshows and small theatres, is being marketed by the Victor Animatograph Corp., Davenport, Iowa. Known as the Victor 1600 Arc, it is said to be capable of delivering 1600 lumens on the screen for a full 58 minute show using one set of carbons and operating at 30 amperes.

The Victor projector consists of three portable components, rectifier, speaker and arc lamphouse, which can be assembled in as little as five minutes, the company says.

The rectifier serves as a base for the complete unit. It has stabilizing, swing-out legs with built-in floor levelers for operation on uneven floors. Illuminated top-mounted controls include a service line voltmeter with voltage selector for operating the rectifier at maximum efficiency; a circuit breaker switch rated at 20 amperes for overload protection, and an eight-position output tap for supplying proper voltage.

The source of illumination is a self-contained portable arc lamphouse which is attached to the amplifier unit by means of a finger-tip snap-lock catch. It has an ammeter for checking current, and a Mercury safety switch inside the lamp house door for protection against exposure. The F:1.4 condenser lens is removable for cleaning.

The amplifier unit also has top mounted controls. It can also be used as a recorder or as a "plug-in" amplifier for a record player. Output of the amplifier is 25 watts with less than 5 percent harmonic distortion. A standard Victor projector movement is permanently mounted on the amplifier unit with the addition of an automatic dowser as an added safety feature.



Victor 1600 Arc portable projector

Westrex, Magnasync Make "Penthouses"

Most firms producing motion-picture sound equipment are now marketing the "penthouse" reproducers needed to handle the four magnetic sound tracks used in the CinemaScope and other scope films. The Westrex Corp. recently announced that it is in full production on the penthouse units, and two West Coast firms, Magnasync Mfg. Co. and the Natural Sound Corp., announced that they have them available.

The Westrex reproducer, known as the R9, uses two impedance drums to provide the tight film loop which is desirable for magnetic reproduction. Other features are the Davis drive and flutter suppresser, an idler which can be adjusted to the length of the film path of different makes of projectors, and a large 32-tooth sprocket which controls the film on both sides of the magnetic head and which is locked when either of the associated rollers is in an open position to facilitate threading.

Since the upper magazine is offset toward the rear, the use of the R9 reproducer does not interfere with the operation of projectors throughout the range of vertical projection angles normally incurred.

The reproducer has been designed for use with standard theatre equipment without replacing or making any modern projector or sound head obsolete. When the stereophonic features of the R9 are not in use, they are bypassed in the film threading operation and the photographic sound head functions in its normal manner. The R9 unit measures 6¾ inches in height, 13 inches in width and 6¾ inches in depth.

Under precision bridge tests, the flutter content is said to be below 0.10 per cent as compared with the Academy standard of 0.15 per cent. Particular attention was paid to the film path to minimize wearing of the magnetic head.

A new material known as "nylatron" is used on all pad rollers. This material is nylon impregnated with graphite and is said to require very little attention. The R9 is a film-pulled mechanism and does not require any special motor or drive. Oilite bearings are used on the filter rollers and the guide rollers. The impedance drums have ball bearings and as a result require no special lubrication.

The R9 stereophonic reproducer is distributed abroad through Westrex offices in 36 countries and is available in the United States through the Century Projector Corp. and Motiograph.

Magnasync announced that its penthouse soundhead is designed around the "Synkinetic" dual-flywheel principle which it says was originated by the company's engineers and is now widely used in magnetic film recording and reproducing machines. The principle is said to make use of different mass and inertia in the two flywheels to prevent interaction and also employs a silicone packed "clock spring" filter-arm damping mechanism.

It was also announced that Magnasync stereophonic sound systems already in theatres can be converted from separate reproducer to penthouse reproduction at low cost to the exhibitor since the company will accept return of the unneeded portion of the separate reproducer for cash credit.

The Natural Sound Corp. announced that it is distributing a penthouse reproducer for Kinevox. Its specifications include stainless steel for rollers and other moving parts and Oilite bearings which will require no lubrication for at least two years of use. The 4-channel brush soundhead is exactly the same as the unit standard throughout the industry.

"Penthouse" heads are designed to fit specifications set by Twentieth Century-Fox.

CHARLES E. "CHICK" LEWIS

The death on October 22nd of Charles E. "Chick" Lewis, editor and publisher of *Showmans Trade Review* and executive vice-president of the Variety Clubs' Will Rogers Memorial Hospital, came as a distinct shock to the motion picture industry. Mr. Lewis, who was 57, had been at work in his office the day before he was stricken with a fatal heart attack at his home in Scarsdale, N. Y.

Born in Brooklyn, N. Y., Mr. Lewis started in pictures as a studio boy with IMP, later working with the Jungle Film Co. and the World Best Film Co., both Carl Laemmle enterprises. After working for some years in the booking and exhibition fields, Lewis joined the staff of *Motion Picture News* in 1928, launching his own publication some five years later.

Mr. Lewis is survived by his widow, Mrs. Marjorie Winston Lewis, by two daughters, Patricia Ann and Judith Ellen, and by one brother, Harry M. Lewis, and a sister, Mrs. Lillian Bernstein.

Although there is dispute about the "first," Thomas A. Edison is said to have shot the first motion picture in 1889 using a film base provided by George Eastman.

Lens Cleaning: Do's and Don'ts

THE constantly increasing demands put on projection lenses to transmit more light to the screen and the urgent need to maintain sharp definition despite greatly enlarged screen sizes, renders it imperative to exercise caution when cleaning projection lenses in order to avoid damage that may *permanently* lessen their efficiency.

The coated surfaces of modern lenses, while even harder than optical glass, still are microscopically thin. A very small amount of abrasive action will cut through the coated surface and destroy its anti-reflective properties.

Solvents such as alcohol, carbon tetrachloride, lighter fluid, etc., should be used very sparingly and only when absolutely necessary. This is the most drastic cleaning action to which a lens can be subjected. If even a very small amount of solvent finds its way into the segments of the lens it will attack the optical cement and induce rapid deterioration and may also attack the lacquer of the lens mount. It can also cause permanent damage to the seal.

All that is needed in the way of lens-cleaning materials are a small camel's-hair brush; a quantity of 2-inch squares of clean, dust-free cotton cloth; a cleaning solution made by dissolving a piece of mild, pure soap the size of a large pea in a pint of pure (distilled) water, and a bottle of distilled water for rinsing off any scum which may remain after gently cleaning the lens with a soap solution.

The soap solution should be used sparingly for removing oil, fingermarks and similar stains from the lens. It should be used only for this purpose and not for the routine removal of dust.

Laundry soaps and soap powders should never be used for making up the cleaning solution because they may contain trisodium orthophospate, borax or an excess of caustic soda — substances that can react chemically with glass. Soapless detergents may also be dangerous because, although harmless themselves, most of the commercial preparations are adulterated with harsher agents.

It should be remembered that dust particles are often harder than the lens coating and hence are very abrasive. For this reason a lens should never be touched with a completely dry cloth. For the routine daily cleaning, place your main reliance on your camel's hair brush and on your special lens paper.

IA-IP RADIO HAMS

By
AMOS
KANAGA
W6BAA

Sec., Local 409,
San Mateo,
Calif.

ALL PRIZES for last year's IA-IP ham radio contest were finally distributed a few months ago. According to the boys' requests we should have had nothing but "grid dippers." Distribution took quite a while because of the choice given on the awards.

Well, fellows, now that the bands are opening up, (we hope) with even 10 meters allowing some early evening short skip, and of course the 40-meter phone band all the rage now, a lot of us will be able to get those additional QSO's needed for the "IA-IP Worked 10" award — also those last few but hard-to-get contacts for the "Worked 25" gold award.

A tip that has paid off came in from Jim Evans WϕGSW of 242, Pittsburgh, Kansas, that the time differences, particularly with daylight saving time, plays a big part in these IA contacts. The West Coast gang is on 75 usually after midnight, so to get a QSO it would be necessary to stay up until two or three a.m. This may be OK for the drive-in men but personally my XYL might object. So try 40 about noon to two p.m., you Easterners, and we Westerners will be looking for you.

Those in the know seem to think that band conditions will start really opening up before winter. We hope so. While monitoring the band the other day we heard two IA brothers in contact. After their QSO one of them was hooked, and the first thing he said was: "I never worked any IA men before; you're the first one!" When we told him that the QSO just previous was an IA man he wouldn't believe it. Did you get his subscription, Mr. Editor? We told him all about the IA-IP radio mens' list.

What's happened with you Canadian VE lads? We haven't heard of any of you on the bands for quite a while. Is it 3-D there too? Don't forget gang it's still Monday mornings from 9 a.m. on ten when open and now 40 meters on about 7275 — yep, we are on 21 MC too, phone and CW — if it's not too fast.

73 gang.

Depth Perception, An Eye Doctor's Opinion

3-D is at least 2,500 years old, according to an article in the *Journal of the American Optometric Assoc.* Egyptian and Grecian works of art pre-dating the Christian era show use of "interposition," which is still the most powerful of the many clues to perception of the third dimension in motion pictures, still photographs and paintings, according to Dr. T. R. Murroughs, author of the article.

He describes interposition as "overlay of contours — nearer objects overlapping or cutting off parts of more distant objects to make them appear in the background," when depicted on flat surfaces.

He also described experiments in which various clues to depth perception were tested. When one clue is pitted against the others, he asserted, interposition was found to be by far the most potent. It is commonly used even by amateur photographers, and will continue to be one of the most effective, regardless of the elaborate equipment now being perfected by the motion picture industry.

Among other clues to depth are color, light intensity and positions of shadows. In nature or in motion pictures, speed of motion is an important clue. A distant airplane, for example, appears to move more slowly through the visual field than a plane which is close.

"Further pastures actually are greener to the eye," Dr. Murroughs said. "Colors lose their purity as light passes through the atmosphere, so that distant objects, appear a darker shade of color than similar objects nearby. Bright sunlight falling on your lawn tends to produce a yellowish percept, whereas the other fellow's grass is always greener. Trees at a distance appear bluish-green." The atmosphere also makes distant objects appear hazy. In fog, a mountain top appears more distant than it actually is, and this may account for many airplane accidents.

Until recently, scientists assumed that man's perception of depth was dependent on binocularity — the comparison of the different images received by the two eyes which in an adult are about 2½ inches apart. Binocular vision is now considered merely a check on other clues and, insofar as can be determined, one-eyed persons learn to perceive depth as accurately as those with normal vision, the doctor claims.

Seagulls and fishes, said Dr. Murroughs, learn not only depth perception but also learn to compensate for refractive differences that occur when light passes into or out of water. Their judgment of distance is entirely monocular.

IA - IP HAM LISTINGS

K2BFI —Bill Terrill, L.337, Utica, N. Y.
K6BZ —Frank Curtin, L.344, Olympia, Wash.
W5BJ —George Badough, L.604, Corpus Christi, Tex.
W5BON—Jack Poindexter, L.604, Corpus Christi, Tex.
W6ITD —Winston Leverett, L.695, Los Angeles
W6LHF —Del Nelson, L.169, Oakland, Calif.
W6OOM—Edwin Griffith, L.709, Ventura, Calif.
W9AKJ —C. R. Putnam, L.490, Elkhart, Ind.

These are new names to be added to the complete list of IA ham radio operators published in the January, 1953 issue of IP. Another complete list will appear within a few months.

Binaural Sound in 1881

Isn't there anything new under the sun? The film industry and radio have been exploiting stereophonic and binaural (two-ear) sound as new developments. But examination of some old files of the French publication, *L'Electricien*, turns up an article about a binaural demonstration at the *Exposition Internationale d'Electricitie* which opened in Paris in September, 1881.

Permanent telephone lines were hooked up between the Paris Opera House and the exposition, and music flowed whenever opera was being performed. The music was picked up by ten microphones placed near the footlights. To secure a binaural effect, listeners at the exposition had two telephone receivers; that for the right ear was connected to a microphone on the right side of the stage; the other was connected to a microphone at the left. Ten transmitters fed eighty telephones which accommodated forty listeners at one time, twenty in each of two rooms.

Ampex and Altec Sign

The Altec Service Corp. has signed an exclusive contract with the Ampex Electric Corp. to supervise installation of Ampex stereosound equipment in theatres throughout the United States.

Supervisory work has been completed on the Ampex installation in the Rivoli Theatre in New York. Altec engineers are now performing these same duties in Skouras theatres located in the New York metropolitan area, and also at the California Theatre, San Jose, Cal.

BOOK REVIEW

CANADIAN FILM WEEKLY 1953-4 YEARBOOK: *An up-to-date compendium of information about the Canadian film industry.* Edited by Hye Bossin. 211 *pages. Film Publications of Canada, Ltd.*

This book provides a detailed picture of the exhibition business north of the border, and also covers the growing field of Canadian film productions. In addition to much background material and statistics, the Yearbook carries a list of Canadian theatres, giving the population of the town where they are situated and the seating capacity and circuit affiliations of each house. An introductory survey makes the point that the film business in Canada is suffering less than in the U.S. from TV and other competition because of heavy immigration into the country and business expansion there.

Lend-Lease in Lenses

In an effort to speed development of wide-screen use, the Allied Independent Theatre Owners of Iowa-Nebraska has organized a lens exchange service for its members. The "lend-lease" system will help meet the shortage of projection lenses in the shorter focal lengths.

Canada Builds Film Center

Work will be started before the end of this year on a new $6,000,000 film production center in Montreal, Canada. The center, being constructed by the National Film Board, will supplement facilities now in operation in Ottawa.

Canada's 83 New Theatres

Including 56 drive-ins, a total of 83 new theatres have been built in Canada since the beginning of the year. Construction is now proceeding on 11 drive-ins and 16 indoor houses, with 10 drive-ins and 18 standard theatres in the planning stage.

OBITUARIES

EARL MATHEWSON, 56, member of Toronto Local 173, died suddenly last month. He became a member of the Local back in 1921, and up to the time of his death was an ardent sportsman, being keenly interested in hunting and fishing.

JAMES V. FENSORE, former business representative for Local 277, Bridgeport, Conn., and member of the Local for the past 34 years, died last month, following an illness of several years. Fensore was one of the organizers of the Bridgeport Local and served in various official capacities.

more B.A.*

*(BOXOFFICE APPEAL)

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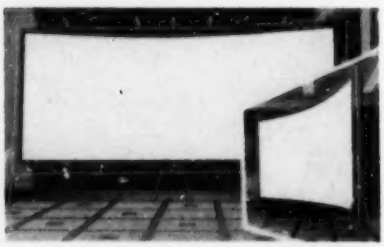
New Products for the Industry

RADIANT WIDE SCREEN FOR 16-MM. This screen is being marketed for use when industrial, sales and similar films are projected with an anamorphic lens. It is made of a highly reflective, silver-finish fabric and it is produced in sizes ranging from 5 to 20 feet in width for pictures shown in an aspect ratio of 2.55 to 1. When the screen is not in use, the



This is the new portable Magniglow Astrolite screen for 16-mm projection using anamorphic projector lenses. It is made by Radiant Manufacturing Co.

fabric can be rolled and the light-weight frame folded for storage in a metal case that is provided. Further information may be obtained from the Radiant Mfg. Corp., 2627 W. Roosevelt, Chicago 8, Ill.

CINEMATIC ADAPTER FOR STEREOSOUND. An adapter system which enables theatres to reproduce the four magnetic sound tracks of CinemaScope film over the present amplifying and speaker equipment of small theatres has been announced by the Cinematic Corp, 122 Washington St., Bloomfield, N.J. The adapter consists of a four-channel penthouse reproducer which picks up the sound from the magnetic tracks. Then an automatic switch-over feeds the sound from the penthouse equipment on either projector into four plug-in preamplifiers and fader. From the preamplifiers the sound is fed through a mixer that blends the sound from the four tracks into a single input matched to the theatre's power amplifier and speaker system.

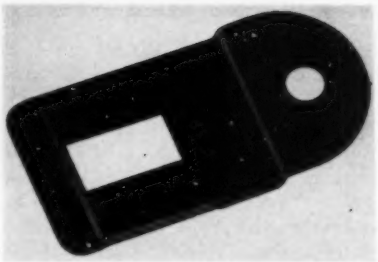
AMPEX STEREOSOUND SYSTEMS. Complete theatre sound systems for the showing of CinemaScope and other processes using stereophonic sound are being marketed by Ampex Corporation, Redwood City, Calif. All components, from magnetic soundheads to loudspeakers, in the Ampex Multi-Directional Sound systems are built by the company itself. The systems, available in five sizes, range in basic cost from $4,500 to $10,300, tailored for any size theatre. Among the components of the system are the Ampex "button-on" soundhead which can be fitted to all modern projectors. Speakers are the new Jim Lansing design built by Ampex under license. Ampex claims that the system provides safeguards for any emergencies, and that failure of projector changeover equipment, amplifiers, or loudspeakers can be corrected in a matter of minutes in most cases.

NEUMADE FILM SPLICER. This splicer, designed for CinemaScope film, permits the user to scrape the emulsion from the tops of the film and then remove the magnetic soundtracks from the back of the overlap without taking the film out and turning it over. Neumade Products Corp., 330 W. 42nd St., New York 36, N.Y., calls it the Neuscope splicer.

STRONG "SUPER 135" ARC LAMP. Designed to give the tremendously increased volume of light demanded by CinemaScope projection, this new lamp is now being installed in many key theatres throughout the country. Featuring the Infra-Ban beam cooler unit, the Super 135 burns the new 10-mm Hitex carbons at 135 amperes, or the 11-mm carbons at 120 amperes. It can burn the 10-mm Hitex at 120 amps or the 11-mm at 115 amps for a full hour.

RCA PORTABLE SOUND SYSTEM. Interest is being expressed in the United States about a "sound-on-wheels" package introduced in England by RCA Photophone and engineers of the Associated British Cinemas. Initially used in Brighton, Birmingham, and Belfast for showings of the "House of Wax," the three experimental models are now being "bicycled" from theatre to theatre throughout the British Isles. Each set of equipment comprises a 3-D selsyn interlock conversion kit, the necessary control units and an auxiliary amplifier system, all packaged for convenient installation in conjunction with existing apparatus for stereophonic sound.

One of RCA's pretty employees is holding the smallest Tv camera tube ever developed for broadcast use. Only a fraction of the size of the standard movie pickup iconoscope tube (shown on the table), the new Vidicon tube weighs only two ounces but is said to be almost three times as sensitive.



Above is a projector aperture plate for the new wide-screen aspect ratios as produced by the LaVezzi Machine Works, Chicago, and available through theatre equipment dealers. These plates, made for Simplex, Super Simplex, E-7, and Century projectors, are produced in ratios of 1.66 to 1, 1.75 to 1, 1.85 to 1, and 2 to 1. They are also available in undersize widths for filing to correct keystone.

POLA-LITE 3-D ALL-PLASTIC VIEWERS. Three new models of these glasses, the Hi-Lite for adults, Juvenile for children, and a clip-on model, are now available. An eight-page booklet, "Helpful Hints on how to improve your projection of 3-D Pictures", may be obtained at any branch office of National Film Service, or by writing to the Pola-Lite Company, 630 Ninth Avenue, New York City.

AMERICAN SELENIUM RECTIFIER. This new heavy-duty arc lamp rectifier, using 50,000-hour stacks, is offered to the industry by Norpat Sales, Inc., 113 W. 42nd St., New York City. All models have full glass insulated transformers. Ripple, the company asserts, is held to 1 per cent with 12-phase full wave amplification giving 720 impulses per second. An extremely low flicker is claimed. By means of a 21 position, 8-point switch, wired to each phase of the 3-phase line transformer, output current and voltage are controlled to the arc.

450,000 16-mm Projectors

Estimates place the number of 16-mm movie projectors in use in the United States at 450,000. Of these more than 100,000 are in schools.

ABC Builds on Coast

The American Broadcasting Co. has started work on a new $1,500,000 television and radio building in San Francisco for stations KGO and KGO-TV.

KING-SIZE ARC LAMP

(Continued from page 22)

given to projection room space requirements and to special pedestals for mounting the lamp. Today's projectors, having optical clearance for only F/2.0, or very slightly faster, systems, could not possibly pass the high speed beam from this lamphouse and present projection lenses would likewise be inadequate in acceptance angle.

"Furthermore, even if all projection equipment could be coordinated to this powerful lamphouse, there is no combination of film base and heat removing means available that would allow projection of film to be accomplished without film destruction.

"Using an analogy, present theatre equipment in its overall aspect could be likened to our present system of highways. If some auto manufacturer started making a car capable of 200 miles an hour, the chief advantage of the car could not be utilized since the present highways could not accommodate it.

"So far as indoor or outdoor theatre requirements for all the present new principles of picture presentation are concerned, lamps available right now, and not only from Strong Electric, can handle any situation."

EVERYDAY SCIENCE

TELEVISION is another field where unusual uses are being found for basic equipment. Recently a TV camera was installed in an obsolete Grumman fighter along with radio control devices. The resultant robot "suicide" plane was catapulted from the aircraft carrier *Boxer*, carrying a 200-pound bomb. It was then guided into a flack-ridden territory in North Korea to destroy a ground installation.

• • •

ATOMIC radiations and Geiger counters are the operators in an automatic-elevator control system recently devised. Small radium buttons, shielded in lead, are mounted at each floor level. A narrow slit, about the width of a sheet of paper, releases a stream of radiations. In the elevator itself is a small Geiger counter that stops the cage at the point where radiations are most intense, leveling cage with floor. The manufacturers claim that this system not only eliminates lots of complex wiring but also brings the elevator to a more level stop.

NEW! f/1.8

Bausch & Lomb

B&L Super Cinephor

Projection Lenses

First and only lens giving full edge-to-edge sharpness on widest screens!

Now . . . the *one* lens series that gives you today's brightest, sharpest image on any screen: CinemaScope, 2-D, expanded 2-D, and 3-D! Finest edge-to-edge definition ever achieved. White glass—no color absorption . . . transmits full image color and brightness. Fastest projection lens made. Complete range of focal lengths. You're all set *now* and throughout the foreseeable future with this revolutionary new *f*/1.8 series— new world's standard for the motion picture industry.

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CINEMASCOPE

20th Century-Fox recommends the new B&L *f*/1.8 Super Cinephor projection lens with B&L anamorphic adapter exclusively for clearest, sharpest, finest CinemaScope screen images.

WRITE for complete information. Bausch & Lomb Optical Co., 61623 St. Paul St., Rochester 2, N. Y.

1853 1953 INTO A NEW CENTURY OF OPTICAL PROGRESS

BAUSCH & LOMB CENTENNIAL

Scene from "THE ROBE," 20th Century-Fox CinemaScope Epic

M-G-M, Paramount Develop New Camera

Announcements of new camera processes that are said to greatly increase definition and decrease film graininess in both wide-screen and standard projection have been made by two Hollywood studios, M-G-M and Paramount. At the same time Technicolor, Inc., announced that it has developed new dye-transfer color prints that can be used with these camera processes.

In the cases of both M-G-M and Paramount, the method involves a radical change in photography but no alteration in projection techniques. Cameras developed independently by each studio employ single-strip 35-mm color negative, moving horizontally through a modified black-and-white camera. Scenes are recorded on an area equal to two frames of normal color negative.

Working with a double-frame negative, Technicolor's new printing process makes possible the manufacture of a standard 35-mm Technicolor release print in which the images are of normal size and position, permitting either photographic or multiple magnetic sound tracks.

The purpose of the printing process is to record substantially more picture detail on the negative than customary heretofore in order to obtain 35-mm prints which clearly and accurately reproduce all the elements of the scene, especially when large-screen projection is required

Technicolor will not supply cameras for the new color processes. These have been developed independently by the studios. After tests made by Paramount, employing a camera modified by Paramount, it was decided to photograph "White Christmas" using this process. Loren Ryder, technical director of Paramount, told IP that the results of the first week's shooting were so good that a standard camera used as a safeguard was pulled from the set.

At the same time, M-G-M technicians announced that experiments had been completed on a new all-purpose camera, designed along the lines described above, and it will probably be used in a retake of the film, "Ben Hur," scheduled for next year. Although specific details on the M-G-M camera have not been released, it was described as employing a 60-mm wide-angle long focal-length lens, with the negative running through sideways on a curve. The film is reduced to standard 35-mm picture frames in the printing. M-G-M claims that test footage has been demonstrated in sizes up to 100 by 50 feet in projection with excellant results.

PENSION PROTECTION

(Continued from page 21)

failure would wipe out the fund completely.

Furthermore, if the company pays out all its profits in the form of dividends to stockholders, or bonuses to executives, every year, for example, then no interest is being accumulated by the pension money, in the form of company profits or anything else. In such a case, the pension money is actually being used to subsidize the dividends and bonuses of stockholders and executives.

Another factor affecting the relative cost of pay-as-you-go and funded plans

USE RCA SERVICE FOR 3-D AND STEREOPHONIC SOUND

Protect the HEART of your theatre and you protect your box office.

...The same prompt, efficient, courteous service that exhibitors have been depending on for 25 years.

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Lorraine SUPER-CHARGED ORLUX Carbons for 3-D CINEMASCOPE & WIDE SCREEN

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- INCREASED STEADINESS
- UNIFORM DISTRIBUTION
- COOLER BURNING

CARBONS, INC. BOONTON, N. J.

is the tax question. Approved funded plans are tax-exempt and contributions are fully deductible even if they currently exceed the total of benefits being paid out of the fund.

The third, and probably the most significant, contrast between funded and unfounded plans from the cost standpoint is the budgeting aspect of the problem. It is here that the relative disadvantages of the pay-as-you-go approach are most obvious and most serious.

A fully funded pension plan is based upon a more-or-less constant and uniform level of contributions. The costs are known, at least roughly, and can be adapted to the resources available and normal expectations. The highest single element of the cost (past service cost) is anticipated and usually disposed of during the early years of the plan's operation. The regular expense of the pension plan can therefore be fitted into a stable pattern along with all of the other normal operating costs of the company.

Terminal Funding

The "terminal funding" method of financing a pension plan lies about halfway between the pay-as-you-go approach and full funding. Under this method, a fund for each retiring worker is created at the time he retires, but not before. The employer puts up, on the day a worker retires, the amount necessary to pay that worker's pension for as long as he lives. This may be done by buying him a life annuity from an insurance company at that time, or by depositing the amount required to pay the pension to his account in a trust fund.

This approach is an improvement over the pay-as-you-go approach, but — from the trade union point of view — not much of one. While a pay-as-you-go plan implies that the worker has no right whatsoever to any guarantees with regards to his pension payments, even after he retires, the terminal funding system implies that he has no rights whatsoever under the plan until he actually retires.

About the only situation in which this approach — or something similar to it — can be considered possibly acceptable would be where it is used in conjunction with some other means of segregating funds for the ultimate payment of pensions, on a current basis. For instance, it might be used as a part of a system in which the members of an employers' association under contract with a union make periodic payments of a certain definite amount of money into a jointly-administered central fund.

Funded systems, however, are the safest and most effective type of pension plan from the worker's point of view in most situations. Briefly stated, a system is said to be fully funded in advance if money is being currently contributed to the pension fund in an amount sufficient to pay for all of the "future service" credits that are currently accruing, plus a portion of the total "past service" liability.

The money put into the fund for each pensioner under a fully funded system would be considerably less than under the terminal funded system, because this money will accumulate interest prior to retirement as well as after. If annual contributions are made with the first payment beginning when the worker is age 40 and the last when he reaches retirement age, interest will pay about 25 percent of the cost of the sum needed at retirement, assuming a 2½ percent interest rate.

The actual cost of one full life pension of $1,000 a year will be about $9,000, as compared with $12,000 under the terminal funding system and $14,400 under the pay-as-you-go plan.

[TO BE CONTINUED]

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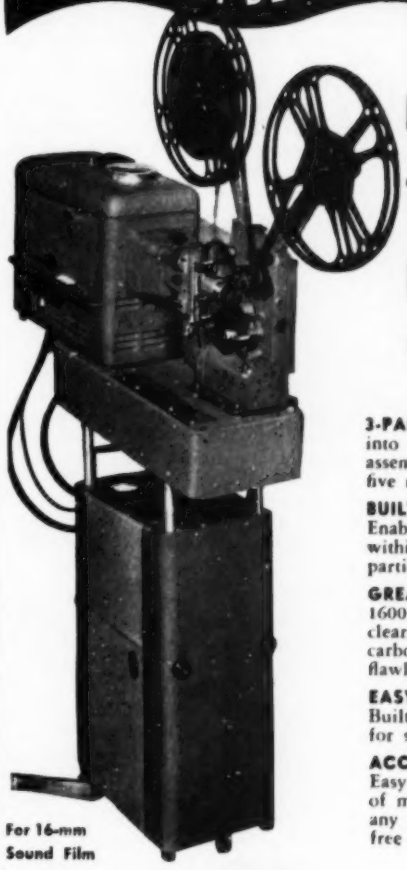

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3-PART PORTIBILITY — Disassembles into three carrying units. Can be easily assembled and set up in less than five minutes.

BUILT-IN VOLTAGE SELECTOR — Enables you to easily and safely operate within voltage requirements of any particular area.

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SMPTE ABSTRACTS

(Continued from page 20)

projector operation and excellent film motion. The use of this unit for the initial experimental recording work which produced the first composite CinemaScope film demonstrations is also described.

A PNEUMATIC PULLDOWN 16-MM PROJECTOR

RAYMOND W. WENGEL
Camera Works, Eastman Kodak Co.

An experimental model of a 16-mm projector is described in which air pressure is used to effect pulldown of the film. Some results of speed tests for this type of pulldown are discussed.

APPARATUS FOR APERTURE-RESPONSE TESTING OF LARGE SCHMIDT-TYPE PROJECTION OPTICAL SYSTEMS

D. J. PARKER, S. W. JOHNSON and L. T. SACHTLEBEN
RCA Victor Div., Camden, N. J.

An apparatus is described with which large Schmidt-type projection optical systems may be tested. The apparatus is adapted to present continuously the response curve on an oscilloscope, where it may be photographed against a grid for further study. The optical system may be tested for response to both radial and tangential line detail, in field zones that extend out to half the normal raster diagonal from the center.

PRIMARY COLOR FILTERS WITH INTERFERENCE FILMS

H. H. SCHROEDER and A. F. TURNER
Bausch & Lomb Optical Co.

A set of vacuum-deposited, thin-film, multilayer, transmission filters has been developed for use as highly efficient primaries in additive color projection. Light which is not transmitted is reflected. Consequently the filters can be used in high illumination beams without overheating and changing color. Modification of the spectrophotometric curves can be effected as desired in specific problems. The filters will be demonstrated.

SYNCHRONIZATION MONITORS AND CONTROLS: DEVICES TO MEASURE AND CORRECT SYNCHRONIZATION ERRORS IN 3-D PROJECTION

R. CLARK JONES
Polaroid Corp., Cambridge, Mass.

An electronic synchronization (sync) monitor has been developed. Its meter shows the magnitude and direction of any sync error, large or small, and a buzzer sounds when the error exceeds one-quarter frame. Alternatively, a simple sync indicator may be used which, however, requires modifying the projector shutters and some training of the projectionist. To correct the sync error, a special control is provided, which connects to one of the two projector synchros.

PROPERTIES OF POLARIZERS FOR FILTERS AND VIEWERS FOR 3-D MOTION PICTURES

L. W. CHUBB, D. S. GREY, E. R. BLOUT
Polaroid Corp., Cambridge, Mass.

Satisfactory 3-D motion-picture projection requires polarizers of high transmission, color neutrality, thermal and temporal stability, and good optical quality to prevent degradation of the projected images. Polaroid glass laminated K-type polarizers are suitable for projection filters.

PRACTICAL APPLICATION OF NEW MOTION-PICTURE TECHNIQUES

RALPH H. HEACOCK
RCA Victor Div., Camden, N. J.

A brief summary, including slides, covers practical application of Synchro-Screen, 3-D pictures, Cinerama and both double-film and single-film magnetic stereophonic sound. The engineering principles involved will be outlined so that a broad accurate picture may be obtained indicating what the new techniques have done to our theatres during the past year.

The first movie exhibition device was called the Edison Kinetoscope. The picture was seen by peering through the eyepiece at the top. Edison then had no faith in pictures projected on a screen.

In 1896, American Biograph produced a film showing a locomotive speeding at the camera and appearing to bear down on the audience.

History's first record of true photography came in 1802 when Thomas Wedgewood described a process for copying etchings on white paper or leather moistened with silver nitrate.

"Talkies" were shown in Mexico in 1905, a gramaphone carrying the sound in rather dubious sync.

Film-Weld
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● The NEW, improved, positive method of permanently patching all types and makes of film—8-mm, 16-mm, 35-mm, Trucolor, Technicolor, Kodachrome, Nitrate and Safety Film.

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For EVERY Theatre Need!
NATIONAL
THEATRE SUPPLY

STEREOSCOPIC PROJECTION

(Continued from page 13)

Trim both lamps with new carbons. Don't run the risk of having an arc snap out while the picture is showing.

Thread up the first two reels of film — the left and right prints of Part 1 — placing the same leader-number or "start" frame over the aperture of each projector. Make certain that the films are in sync, for if one film is only a single frame behind or ahead of the other film, the show will be spoiled.

When threading up 3-D reels, be sure that each reel is placed in the correct machine. Also make sure that the intermittent sprockets are in the at-rest position, and that the two projectors are interlocked.

If an electrical interlock is used, follow the manufacturer's instructions for threading up the projectors. In certain set-ups, the selsyn synchronizing motors (but not the projector driving motors) are turned on for the threading operation. With the selsyns on, the intermittent of one projector is brought to the at-rest position, and the other projector is then slowly turned by means of the hand-wheel or soundhead flywheel until the locking action is felt. The projectors are then threaded *and are not "run down."*

The projectionist, when threading, should make certain that the emulsion-position of the film is correct — facing the lamp if the print be normal, facing the lens if the print be non-standard.

Checking the Picture

When show-time arrives, both projectors are switched on simultaneously by means of the single switch installed for that purpose. And just as soon as the picture appears on the screen, while the various titles are showing, three things — framing, focus, and light — must be checked and adjusted if necessary.

1. FRAMING. Examine the picture first *without* the 3-D glasses so you can see both images. Slowly frame one of the projectors so that the title words line up along the top and bottom edges of the letters. The framing must be done with extreme care and very slowly.

The title images will probably appear to be out of horizontal alignment, but the position of the projectors should not be changed. This out-of-line appearance is merely the image-separation which produces the desired 3-D effect.

2. FOCUS. It is essential that both images be in sharp focus to avoid discomfort in viewing.

Don the 3-D glasses and look at the picture with the left eye alone, covering the right eye with the hand. Focus the "left" machine. Then look at the picture with the right eye and focus the "right" machine.

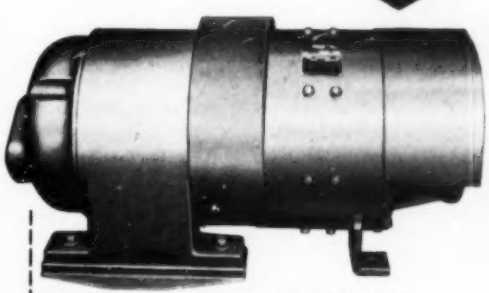
3. LIGHT. It is equally important that both images have the same intensity and distribution of illumination. When one of the two stereo pictures is less brightly lighted than the other, the stereoscopic illusion is weakened and the audience experiences a sensation similar to that produced by soiled viewing glasses.

By alternately covering and uncovering the left and right eyes while wearing the 3-D glasses, inequalities in lighting greater than 8 to 12 percent are readily detected. Close attention should be given to the burning of the carbons as the show progresses.

Wide Screen Projection Requires More Light... Get an "HS" TransVerteR

REG U.S. PAT. OFF.

The "HSD" dual ballast rheostat available in two capacities — 65-100 amperes and 5-31 volts; 85-115 amperes and 5-25 volts.



The "HS" Transverter 115/230 amperes

Control Panel Type G

to Meet THIS INCREASED POWER REQUIREMENT

● Exhibitors everywhere are finding out that wide screen equipment requires increased amperage for proper screen illumination.

Loss of light through use of filters plus giant screen sizes makes existing projection equipment inadequate to do the job.

Additional power is a must, for carbon-arc amperage and voltage requirements have been increased up to 100% for wide screen projection.

In order to get this increased power, get a Hertner "HS" Transverter.

When you buy a Transverter you are obtaining a power conversion unit that has been the standard of the industry for nearly half a century.

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MOTORS . MOTOR GENERATORS . GENERATOR SETS

Projectionists should always be on the lookout for evidences of lost synchronism. A difference of one frame between left and right pictures is bad; a difference of two or three frames gives a really terrible effect. Lost synchronism is seen in moving, not in motionless, objects. Unless the lost synchronism occurs very near the end of a "part," there is nothing to do but shut down the show and re-thread the projectors.

(Editors Note: An out-of-sync condition in 3-D can be corrected while a show is in progress if a projection room is equipped with one of the new sync monitors and a differential switch on the projection interlock, both of which are available through the Polaroid Corp. See the August issue of IP, page 21.)

If a film-break or any other untoward event happens which requires stopping the projectors, use the first frame of a scene-change as the "start" when re-threading. This is a lot safer and quicker than attempting to use frames marked on the basis of footage-number imprints.

If it be discovered that the Left Print has been threaded up in the "right" projector and *vice versa*, don't stop the show. Merely interchange the two Polaroid projection filters while the projectors are running. After all, it doesn't really matter which machine is "left" or "right": it is only necessary to show the Left Print through the left filter and the Right Print through the right filter.

Take Your Time

Above all, don't hurry unnecessarily and risk making serious mistakes when threading up the two reels of Part 2 of the 3-D feature. You have ten minutes of intermission in which to trim the lamps and thread up the film. And no amount of impatience on the part of the audience (understandable as it is) can shorten this necessary intermission. The wise exhibitor will keep his patrons entertained with a vaudeville act during the interlude; the short-sighted one will try to force people to the concession counter.

When the 3-D feature ends, close the dowser and "kill" the arc of the projector having the reel to which the "2-D" shorts are *not* attached. If the switching arrangement permits, cut out the interlock and switch off the driving motor of the "dead" machine. This machine can then be threaded up with one reel of Part 1 of the 3-D feature to save time.

The foregoing is not intended to "teach" projectionists who are already familiar with the manifold details of 2-strip polarized-light 3-D projection, nor is it intended to supersede the instructions issued by equipment-manufacturers and technical organizations. If these notes do no more than point out the necessity of increasing projection-room manpower and the desirability of adequately compensating projectionists for handling a complex, difficult, *and unsuitable* process, they will indeed have served a useful purpose.

[THE END]

Matthews Heads TESMA

Fred C. Matthews, vice-president and general sales manager of Motiograph, Inc., was elected president of TESMA at the association's convention this month in Chicago. Mr. Matthews succeeds J. Robert Hoff, of Ballantyne.

Elected vice-president was Larry W. Davee, of Century Projector Corp., succeeding L. E. Jones, of Neumade.

New directors elected were C. E. Ashcraft, of Ashcraft Mfg. Co.; H. B. Engel, GoldE Mfg. Co.; W. E. Gedris, Ideal Seating, and Arthur E. Meyer, International Projector Corp.

Walter Reade was elected president of the Theatre Owners of America at that organization's convention, held in conjunction with the convention of TESMA and the Theatre Equipment Dealers Association.

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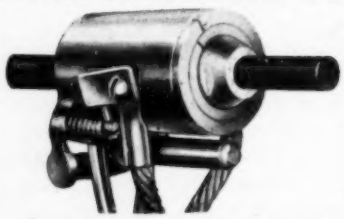

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MAGNETIC HINTS

(Continued from page 8)

be constantly alert against introduction of any spurious magnetism into the reproducing head or into its shield. It should be kept in a magnetically neutral state at all times. However, these heads do acquire a small but growing content of residual magnetism during extended periods of use.

One very simple type of demagnetizer can be fashioned easily for neutralization of heads. The unit employs a simple coil as shown in Figure 2. When a distinct rumble is heard during reproduction, when there should be no such rumble, it is likely that head demagnetizing is required.

Again with the admonition to *remove all film with magnetic tracks from the projection room — remove your watch as well—before using demagnetizing equipment*, the following information on how to construct the degausser is given:

1. Use a silicon steel transformer lamination two inches long and having a thickness of .014 inches or less (too much thickness may cause eddies and other troubles). Its width should be as great or greater than the width of the gap in the reproducer head.

2. Wrap insulating paper or tape around the center portion of the lamination. Devise two fiber bobbins and wind 400 turns of No. 36 enamelled wire in layers between the bobbins.

3. Bend the lamination into the open ended shape shown in Fig. 2. Connect the winding to a 6-volt alternating current. *Make certain not to use direct current.*

4. Be extremely careful not to mar the highly polished surfaces of the reproducer head poles. Place the degausser in contact with the head poles.

5. Very slowly remove the degausser from the head and consume several seconds during removal. Repeat this operation several times, *being careful not to mar the poles of the head.* (Magnetic soundheads are expensive!)

Splicing machines should be periodically demagnetized in a similar manner. New splicers made of non-magnetic metals, possibly beryillium copper, will be available shortly.

Worn Magnetic Heads

After several hundred hours of operation magnetic heads become severely worn from continued and frictional contact with the abrasive oxides of the magnetic film tracks. Stiffness of the film base prevents an entirely satisfactory conformity of the track around the head and, during projection, pressure is applied to maintain the positive contact required. Unfortunately, abrasion is higher in motion picture projection than is the case with the familiar home or office tape recorders. In the latter, the tape is more flexible than film and thus has a much better wrap-around.

The greatest wear of a new head occurs, according to tests, during the first 75 or 80 hours of use. A gap wear of 5 mils may be experienced during the first 80 hours because there is less contact until a new head becomes slightly worn. From the 80 hour period forward the head becomes highly polished and thus presents more contact surface. The wear tapers off gradually to possibly 10 mils for 600 hours of operation. The type of head will determine its life. Your service engineer can give you information on this. Research is now going on for the development of an extremely thin outer coating designed to glaze and lubricate the track without detrimental separation of the track from the head.

Head wear results also in a change in its inductance value electrically in the reproducing circuit. This alters overall frequency response and, in

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localities remote from service areas, replacement may not be readily available. Correction may be effected temporarily as follows:

1. Check laterally across an apaque film bearing a test track for true alignment of track with the gap slit in the head. Use a flashlight to avoid warping or other heat damage.

2. Run a test film (highest frequency) and carefully note the output on the available output indicator.

3. Use the adjustment available and very slowly rotate the magnetic head in axial relation to the film contact. Turn slightly to the right while observing the output indicator. If a drop in level results, reverse the adjustment. Rotate the head slowly to the left and secure it tightly at the exact point where maximum output is noted.

More specifically, one of RCA's triple track magnetic head arrangements is a single unit assembly using pivots and supporting arms to facilitate corrective adjustment. Naturally somewhat more complex than single track units, it still affords single head adjustment. Azimuth or *twist* correction is effected by pivoting the head upon a transverse supporting shaft. For longitudinal correction the triple head assembly is moved in relationship with its mounting base. Once properly aligned, the heads are evenly spaced and uniformly contact the film across its width.

While you read this issue of IP, new and radically different heads are being manufactured. One uses Ferrite, an iron oxide with magnesium ($XO.Fe_2O_3$), and it has extremely high resistance to abrasion. Further details on this head appear in the October, 1953, issue of IP on pages 15 and 19.

Great interest was shown in the Ferrite head, which, according to engineers will outlast heads now on the market by from 50 to 100 times, at the October meetings of SMPTE in New York. It was discussed at length at the TOA-TESMA show in Chicago early this month and the announcement was made that a few of these heads will be available in December of this year.

Before each run, and before any tests or adjustments, clean the equipment as described below. As stated before, a film track acts as an abrasive, and is itself abraded, leaving a deposit of oxide. When this deposit contacts another track, the abrasive factor increases.

Keep the sound drum surfaces and the slit between the magnetic head pole pieces free from oxide deposit, dust or other foreign matter at all times. Clean with a soft camel hair brush and a clean *lintless* cloth dipped sparingly in carbon tetrachloride.

Unthread the equipment before cleaning. Cleansers act as solvents which will damage a track. Dry all parts thoroughly before the next threading.

TV Stations Total 206

Total number of Tv stations now on the air reached 206 early this month when 4 new stations began telecasting. Six new Tv station grants this month brought to 412 the number of permits issued since the ban on new stations was lifted in April, 1952. Of these, 393 are commercial stations, and 19 are educational.

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R. A. ENTRACHT, Business Manager

Sworn to and subscribed before me this 17th day of September, 1953.

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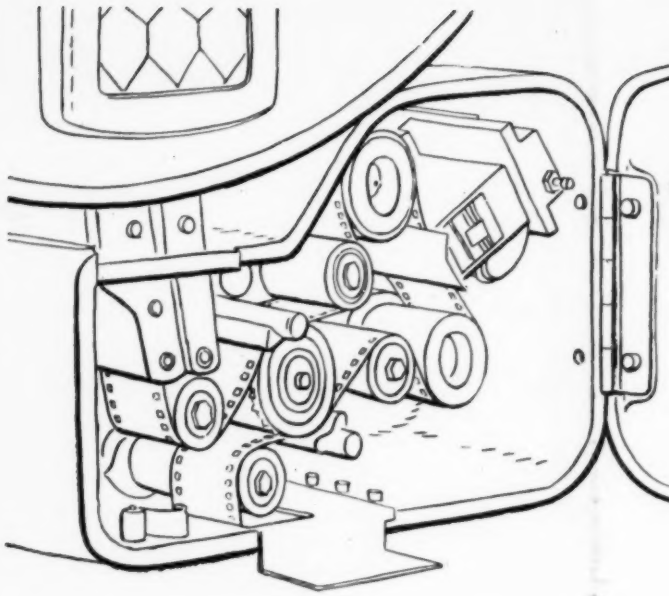

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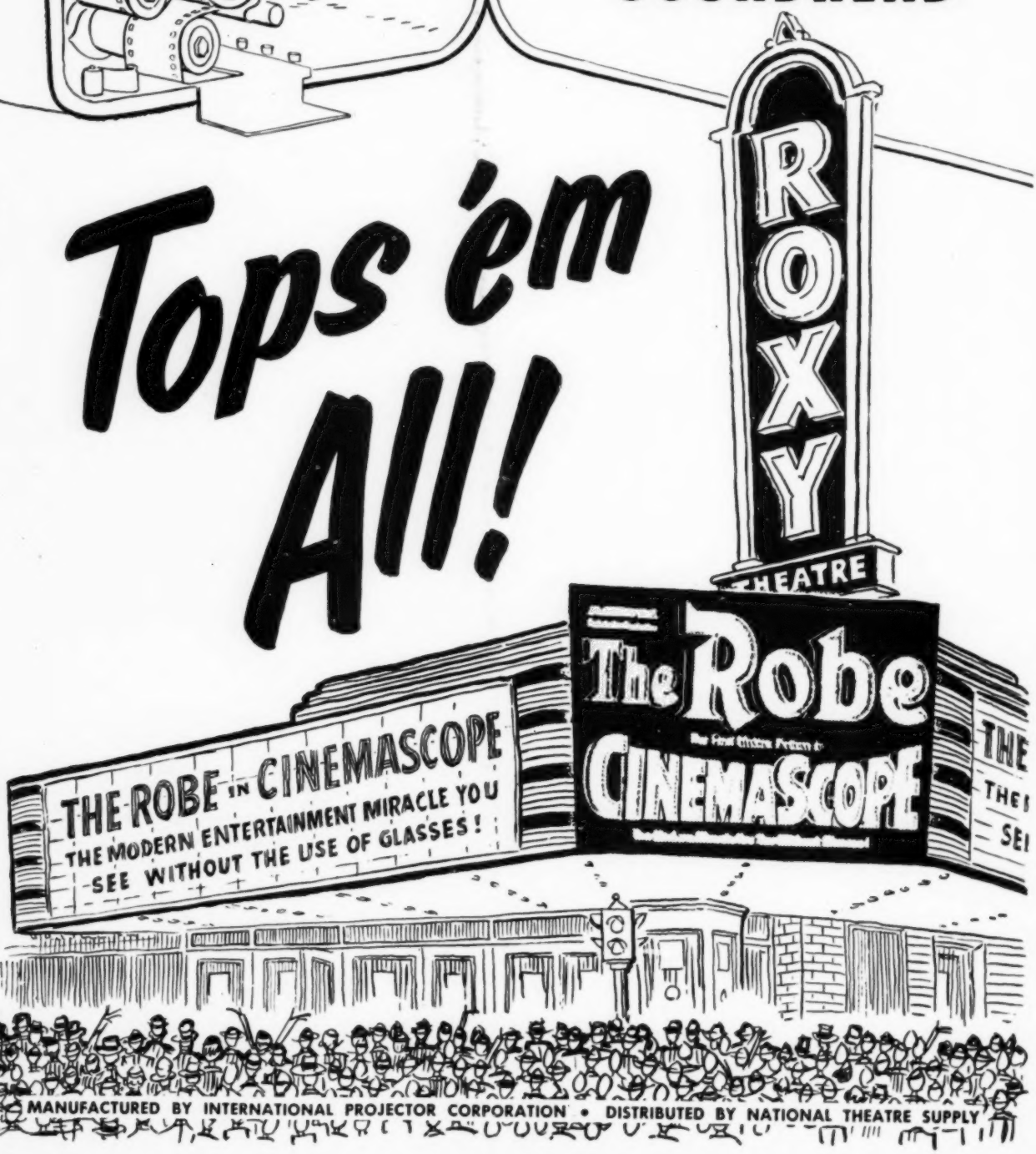

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